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# Problems in Localized Case Hardening

## Low Carbon Machine Steel Used—After Carburization and Annealing, Material to Be Removed Machinable and Not Distorted in Subsequent Hardening

BY R. A. MILLHOLLAND

IN the problem of localized case hardening the manufacturer often confronts losses incurred through experimental expense and defective results.

Localized case hardening, as the writer uses the term, is the production of case hardened parts that have certain areas which from necessity or for reasons of subsequent machining operations must be kept in a machinable state. A characteristic example taken from the writer's experience is to be found in the manufacture of master collet hoods for screw machines. This part is a member of a screw machine which fits on the end of a screw machine spindle. Into it is forced the collet nose employed to grip the stock. It is readily seen that this hood must be accurate or the collet will not chuck the stock concentrically. For many obvious reasons this part must be hardened and ground to obtain the best results.

The method that would be usually employed would be to finish the hood with allowance for the usual grinding and chasing the thread before hardening. This method, however, is poor practice and leads to many difficulties. The principal ones are: Distortion of the thread lead and the added expense of lapping threads that shrink in hardening.

### One of the Problems Stated

Since it was predetermined that the hoods were to be hardened, it was decided that the hoods be made of low carbon steel and afterward case hardened to a depth of about 3/32 in. The case-hardening method was decided upon because it was cheaper to machine the hood from a soft steel and also because localized case hardening could be employed.

In making the first hoods the usual mistake was made; that is, the hoods were machined, allowing stock for grinding, and the threads were chased before hardening. Right there the trouble started, for after the hoods were hardened and ground to size, it was found that some of the threads had shrunk and considerable expense was experienced in lapping in order to fit the gage. Other threads expanded and the parts were a total loss. In still another case the lead of the thread changed so badly that lapping was impractical and these pieces were also a loss. It became very evident that the cost of manufacture was excessive, and, coupled with the excess expense, it was found that no two hoods would chuck a test bar alike even when the same collet was employed. This lack of uniformity was alarming, and after considerable experimental expense the trouble was found in the distortion of the threads.

Once having established the cause, the remedy was the next step. Strange as it may seem, this was not as easy as it now appears. Several methods were available; one was to quench the nose of the hood and leave the thread soft, but this was discarded, as it gave unsatisfactory results. Another method was to use clay packing or copper plate on the thread diameter and not chase the thread until after hardening; but in spite of all that could be done hard spots showed up that made the threading operation too expensive, and even with the utmost care the hard spots affected the lead to such an extent that fault showed up when the test bar was chucked and indicated. Finally the solution to the difficulty came by the process of elimination, and the following method was employed with splendid results and with a minimum manufacturing expense:

### Method Employed

The hoods were machined in the regular way except that on the threaded diameter there was left ¼ in. of stock and on the back face ⅛ in. of stock and the threading operation was omitted until after the carburizing operation. The hoods were then sent to the heat-treat department and the proper penetration of carbon was given with no attention being paid to localizing the carbon. After the hoods were properly carburized they were allowed to cool in the pots and therefore were in the annealed state and quite machinable. In this soft state the hoods went back to the machine shop, and the carburized area on the thread diameter and the back face of the hood were turned off. This turning operation removed all the high carbon steel on the thread area, and when the hoods were subsequently heated and quenched the thread area remained soft and quite machinable, while the remainder of the hood was as hard as could be desired.

The grinding of the hoods was purely a mechanical operation, the accuracy of which was controlled to a nice point. After the grinding operations, the hoods were chucked, indicated for concentricity, and the threads were chased in the soft machine steel without difficulty. This was possible because it is a well-known fact that low carbon machine steel does not harden perceptibly at the temperature which hardens the outer case of a high carbon content. Needless to say the result was a very uniform product with unsurpassed accuracy and interchangeability.

### How a Second Problem Was Met

Another case that came to the writer's attention afterward was handled on the same plan and gave perfect results with no experimental expense. A large fixture required a number of long parallel strips that had to be hardened and ground. These strips were lo-

cated with dowel pins and held in place with filister head screws, the threads being in the strips.

In the light of past experience it was readily seen that if the strips were drilled and tapped before hardening that distortion of the strips in hardening would throw the alinement of the hole in the strips out of relation to those in the body of the fixture. With this in mind the tool room was ordered to make the strips from low carbon machine steel of about 0.10 to 0.20 per cent carbon and to send them to the heat-treating department before drilling and tapping in place. Instructions to the heat-treating department were that the strips were to be carburized to the proper depth and allowed to cool in the pots. This left them in the soft state, and upon being returned to the tool room, the carburized area on the bottom side of each strip was machined off and plainly marked to that effect. The strips were again sent to the heat-treating department and hardened. This method left the side of the strips that was faced to the fixture dead soft and readily drilled and tapped. The strips were then ground, assembled in place, drilled, tapped and reamed for dowel pins without the slightest difficulty. The result was very satisfactory because the holes in the strips matched perfectly with those in the body of the fixture and precluded the possibility of poor alinement due to changing of the relation of the holes in hardening.

The application of this method of localized case hardening is very wide, but the method involved applies to them all. Saving is effected in many ways; namely, using low-priced steel as compared to the cost of high carbon non-shrinking steel, lower machining costs and elimination of losses from breakage or distortion in hardening.

## Stainless Steel in Mining

A paper on "Stainless Steels" was presented at the summer meeting of the Institution of Mining Engineers at Sheffield, England, by Dr. W. H. Hatfield, head of the Brown-Firth Research Laboratories. The London *Ironmonger* gives this summary:

The author asserted that the mining industry has not taken the best advantage of the development in steel metallurgy during the last 40 years. The industry is based on mild steel, and from a commonsense point of view probably it is right. But in the development of armaments, aircraft, automobiles and many other present day applications of steel, there has arisen a series of steels having much greater strength coupled with a considerable and sufficient ductility, which might be applied in different directions in the mining industry.

There are many items which could economically be manufactured of stainless steel, for instance, boiler fittings, pump rods, pump cylinder liners, valve parts for steam, water or air, impeller blades, rotary pumps, fan blades, pins for lifting apparatus, hooks, shackles and pins for coal conveyers, weighing machine parts and gauze for safety lamps. Wire ropes made from stainless steel are costly, but they have a definite application under certain conditions. Experiments have been carried out with rustless ropes, and he thought that shortly such ropes will be used in collieries. Springs are being manufactured successfully from rustless material.

## International Conference of Cost Accountants

The preliminary program of the third international cost conference to be held under the auspices of the National Association of Cost Accountants in Atlantic City, Sept. 23 to 28, inclusive, lists the following among the subjects for discussion: "Actual Costs as Compared with Replacement Costs," "Sales and Administration Costs," "Standards as a Means of Reducing Costs," "The Place of Costs in Business Management," "Cost Problems of Specific Industries—Steel and Textile Industries."

The National Association of Cost Accountants has 20 chapters in different cities in the United States and Canada, and one recently established in Hawaii.

## Drop Forging Meeting in October

The American Drop Forging Institute will hold a convention in Detroit on Oct. 3, 4 and 5, concurrently with the convention of the American Society for Steel Treating. It is planned to hold two joint sessions of the two bodies.

A few months ago the institute and the former American Drop Forge Association joined forces, all members of the latter body becoming automatically members of the institute until July 1. At that time they were given an opportunity of becoming either associate or executive members of the institute according to their eligibility.

Executive members are those whose principal drop forging business is the manufacture and sale of drop forgings to other than affiliated companies, while associate members comprise those who manufacture drop forgings chiefly for their own use. Associate members join with the executive members in regional group meetings held periodically to consider matters of common interest to all producers of drop forgings for whatever purpose, as well as in the annual convention. Executive members in addition meet five times a year to consider questions primarily of interest to the commercial forger only.

It has been decided that all producers of drop forgings will be asked to participate in the October convention on exactly the same basis as active members of the institute. With the added attraction of the concurrent proceedings of the American Society for Steel Treating and the international steel exhibition the largest attendance of any drop forging convention is expected.

## New Switches for Electric Tool Handles

Two new types of compact electric tool and appliance switches have been brought out by the Cutler-Hammer Mfg. Co., Milwaukee. One, designated as the No. 7037 switch, is of the momentary-contact type for installation in the handle of such tools as drills. It is placed so that when the tool is gripped the forefinger rests on the trigger pressure which turns on the current. A return spring causes the trigger to return to the "off"

When the Grip Is Released the Switch Automatically Cuts Off the Current

position so that when the grip is released the switch automatically cuts off the current. Long phosphor-bronze contacts of generous proportions and a wiping motion are features intended to add to the serviceability of this equipment.

A No. 7039 switch having a different form of operating lever with no return spring has also been developed for use in vacuum cleaners and similar appliances where the switch is to remain in the "on" or "off" position until moved to the other.

Boston pig iron interests have organized as the Iron Monger League, Puritan Chapter, with E. Arthur Tutein, president; J. O. Henshaw, vice-president, and W. J. Lavelle, sales manager New England Coal & Coke Co., secretary and treasurer. The chapter held its initial outing on Wednesday, July 19, at the Winchester Country Club, Winchester, Mass., as guests of Mr. Tutein.

# Anti-Friction Bearings in the Steel Mill

## Development of Ball and Roller Bearings—Considerations Affecting Their Use—Advantages and Disadvantages

BY A. M. MAC CUTCHEON*

ELIMINATION of friction has always been a most fascinating study in all branches of engineering. The use of rollers under a block of stone was known to the ancient Egyptians. Wheels used on chariots marked the first development in changing rolling friction, between the ground and the weight, to rubbing friction in an axle. Crude ball bearings were first considered about 1862 to 1870, the Patent Office files showing several patent applications at about this time. But the first practical applications came in the early nineties, with the use of the cup and cone bearings on bicycles.

Indeed, the history of the anti-friction bearing is closely identified with the development of the bicycle and the automobile. This industry furnished the stimulus for intensive effort toward the production of a bearing more general in its application.

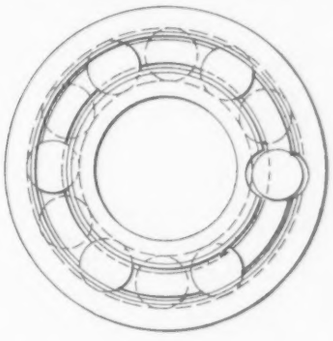


Fig. 1. Slot Assembly of Balls

The first type of annular or ring ball bearings was developed about 1901, based upon investigations made by Professor Strybeck. The annular bearing consists of two independent concentric rings, of practically rectangular section, and with grooved raceways in the outer surface of the inner ring and the inner surface of the outer ring. In this groove a row of balls is placed, and the whole is a self-contained, non-adjusting bearing. It was recognized that, theoretically, the annular bearing should contain as many balls as the space permitted. The number of balls which may be introduced into any bearing is intimately connected with the method of assembly, which will be discussed in greater detail under the various types of bearings. One method, with a slot in the side of the bearing, permits the maximum number of balls, but breaks the continuity of the race, and usually necessitates a shallower groove.

In another method, the Conrad patent, the introduction of the balls takes place by means of an eccentric displacement of the rings in relation to each other. The number of balls which may be introduced is limited, but the raceway is continuous and deep grooves may be used.

One type of bearing, which has been very largely used, was developed with a roll not solid but made up of a spiral. Considerable difficulty was experienced with the misalinement, and the consequent stresses not anticipated in the design. In 1906 a native of Sweden invented a two-row annular bearing with a self-alining feature, which it was claimed eliminated the sensitiveness to misalinement. Another claim for the double-row bearing is the increased number of balls which may be introduced in such a bearing.

In 1905 the first commercial application of annular ball bearings was made in America, although these bearings had been previously used abroad. The application was on a marble polishing machine for the Empire City Iron Works, in Long Island, and proved satisfactory. At about the same time, ball bearings were first applied to electric motors, and the two electrical manufacturing companies who were the pioneers in the use of ball bearings for motors are still using them.

In 1905 ball bearings were being favorably considered by the automobile industry, and during that year they were applied to the transmission of a 50-hp. Thomas flyer. In 1906, an Apperson car, built for the Vanderbilt Cup race, had its transmission so equipped. In 1910 one machine tool company exhibited at Atlantic City and elsewhere a vertical spindle drill press mounted on ball bearings, which drove a 1½-in. drill through 31 in. of cast iron per minute, and a 3½-in. drill through 11½ in. of metal per minute. This, of course, meant a very heavy end thrust on the bearings. Also, in 1910, ball bearings were used to take the thrust on belted vertical milling machines.

It is interesting to know that ball bearings have been used, also, on power punch presses, where there is undoubtedly a very heavy shock condition. The claim is made that, on such a press, the use of anti-friction bearings decreased the idle stroke power 54 per cent and the working stroke power 20 per cent, and that the power saving for the complete cycle was 40 per cent. Nineteen hundred and ten marked another interesting application of anti-friction bearings to a cold saw, which ran at 4100 r.p.m. Plain bearings had required renewal about once in three weeks, with consequent shutting down of the machine. Twenty hp. was required to drive the saw when equipped with oil type bearings, and water cooling was employed. After the change in the bearings, a 7½-hp. motor was substituted for the 20-hp., and there is no evidence of further bearing trouble.

Fig. 2. Conrad Eccentric Assembly of Balls

In the catalog published by one anti-friction manufacturer is listed a bearing ½-in. outside diameter and weighing a few ounces, while the largest is over 19 in. outside diameter and weighs approximately 300 lb. Special large radial bearings have been made by this company, having an outside diameter of 32¼ in. and a bore of 15¾ in. This bearing, fitted with 34 balls 4¼ in. in diameter, has a total weight of 1000 lb. and will carry a weight of 80 tons at 100 r.p.m.

Many types of anti-friction bearings are being manufactured, to some of which reference has already been made. A classification, with examples of each type, is given, but the information is not complete.

### 1.—Ball Bearings

(a) Annular type with deep grooves, balls assembled by eccentric displacement of the races.

Hess Bright Ball Bearing Co.
Fafnir Ball Bearing Co.

*Chief designing engineer, Reliance Electric & Engineering Co., Cleveland. Abstract of a paper read before the Association of Iron and Steel Electrical Engineers.

(b) Annular type with balls assembled through filling slots, permitting of a large number of balls.

Standard Roller Bearing Co.

(c) Annular type with balls assembled by expansion of the outer race under heat, permitting of a large number of balls.

Gurney Ball Bearing Co.

(d) Annular type with a double row of balls, permitting of a larger number of balls.

New Departure Ball Bearing Co.

(e) Annular type with a double row of balls and self-alining features.

S K F Ball Bearing Co.

2.—ROLLER BEARINGS

(a) Self-contained, with the inner and outer races forming a cage for the rolls; rolls assembled through filling groove.

Rollway Roller Bearing Co.

(b) Semi-flexible spiral roll assembled between end cages, and with the outer and inner races slipped over and within the rolls, permitting easy disassembly, but not capable of taking end thrust.

Hyatt Roller Bearing Co.

(c) Tapered rolls assembled between end cages, and with tapered races, permitting easy disassembly, taking end thrust, and making possible adjustment for wear.

Timken Roller Bearing Co.

Practically all types of ball and roller bearings are assembled with end cages, which maintain the proper relation in position of the ball and rolls. The proper design of these end cages is as necessary as the proper design of the rest of the bearing.

### Manufacture

This is a highly specialized industry requiring special machinery, special materials and special operation. All bearings must be subjected to rigid inspection and test. The three most important properties which a finished anti-friction bearing should possess are (1) high fatigue limit and strength; (2) high resistance to shock; (3) highest possible resistance to wear.

Each bar of steel used in the manufacture of balls or rolls and races is tested. The steel must possess in the highest degree the qualities of hardness, toughness, durability after hardening and resistance to shock. The best balls are made of chrome alloy steel and carefully heat treated. They are hardened clear through, which makes the steel tough and less liable to crack under excessive load. They must be as spherical as it is possible to make them. The best grade balls are ground to size within 0.0001 in., an accuracy necessary to secure uniformity in size, and consequent even distribution of the load. The manufacture of a ball involves eleven main operations, as follows:

1.—Inspection and testing of steel stock.
2.—Forging or pressing in dies into rough spheres.
3.—Annealing to eliminate internal strain.
4.—Rough grinding.
5.—Second heat treatment; the balls are hardened, and then drawn, to toughen the steel.
6.—Second rough grinding to a fairly smooth surface, and more accurate spherically, but still considerably oversize.
7.—Precision grinding with fine grade wheels and heavy oil holding an abrasive in suspension.
8.—Final grinding in Hoffman machine, in which the balls are ground to within a small fraction of the finished size.
9.—Polishing balls in a tumbling barrel.
10.—Burnishing the balls, by which the surface is polished to a mirror finish.
11.—Final inspection and test for hardness, sphericity and size.

The balls are gaged with special machines calibrated with special care, and by the use of an instrument with which it is possible to determine the size to an accuracy within 0.00005 in. The same care is exercised in the manufacture of the races. One bearing manufacturer considers it necessary to manufacture his own steel, because of the exacting specifications. The steel tubes of which the races are manufactured are formed by forcing a pointed steel tool through the entire length of a steel bar, which results in a tube free of welds, laps or seams, and which has a uniform strength and texture on its entire circumference. The tubes are finally cold drawn to size, within a very close limit.

### Selection of Anti-Friction Bearings

If anti-friction bearings are applied to motors, close co-operation is essential between the motor manufacturer and the ball bearing manufacturer. Several years ago the electrical engineer of an eastern railroad advised selecting a bearing two sizes larger than indicated by a consideration of the load which the bearing was expected and guaranteed to carry. He attributed the entire absence of trouble on car lighting outfits to the following of this plan.

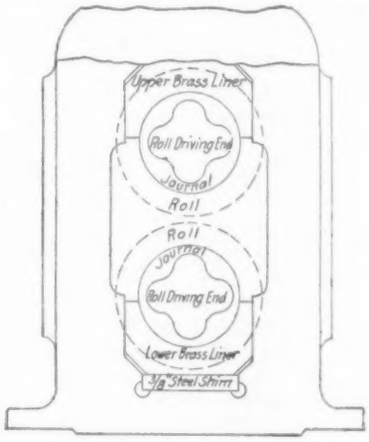
In justice to the manufacturer of the anti-friction bearing it should be stated that, since that time, exhaustive study has been made of the requirements of anti-friction bearings applied to motors, so that they are in a far better position to-day than at that time to specify the safe working load for the bearing. From many sources information has been received that, if the bearing is selected large enough and properly applied, no failure will result. This undoubtedly is an extreme view, but is interesting as evidence of the confidence which some users of anti-friction bearings have in this type.

*(To be continued)*

## Saving Rolling Mill Brasses

BY M. E. DUGGAN

Worn journal brasses often cause rolling mill spindles to drop at the roll end below the level of the power end. When this occurs, considerable friction results in the spindles and couplings. While poor lubrication aggravates this condition, there is, nevertheless,




A ⅜-In. Steel Shim in Place at Bottom of Housing

something radically wrong with a noisy drive, and as a rule mill operators take prompt measures to correct it.

A usual remedy has been to replace the journal brasses, which resulted in the scrapping of worn and even slightly worn brasses long before they had become unserviceable.

A steel riser block placed under each liner, as shown in the sketch, will help to keep the rolls up to pretty near the normal level line, thus eliminating much of the friction. These blocks or plates can be made in sets varying in thickness from ⅜ in. up, thus getting all possible wear from the brasses. The roll can be raised and lowered with the traveling crane by means of a sling under the bottom roll.

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The Southington Hardware Co., manufacturer of hardware, screws, etc., Southington, Conn., at its annual meeting last week, elected the following officers for the coming year: James H. Pratt, president; William E. Smith, secretary; and F. M. Gridley, treasurer. The directors chosen were: Ex-Governor Marcus H. Holcomb, Charles Hopkins Clark, Cyrus C. Chamberlain, Bradley H. Barnes, William E. Smith and W. P. E. Vierning.

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The Norwalk Iron Works, South Norwalk, Conn., and the Automatic Carbonic Machine Co., Peoria, Ill., have combined, the new organization to have a capitalization of $1,500,000. C. L. Thompson of South Norwalk, will become president. Each company shall continue manufacture of machinery as previous to the merger. This includes oxygen and hydrogen compressors, air compressors and refrigerating machinery, both for ammonia and carbonic acid gas.

# Factors in Oil Burning Using Cold Air*

## Study of Different Conditions of Air Supply with Comparisons of Cost—Regenerative Furnaces and Steam Boilers Not Considered

AIR for use in oil burning practice is divided into three general classes: *A*, volume air at pressures below 12 oz.; *B*, positive air at pressures of 12 oz. to 2 lb.; *C*, compressed air at pressures above 2 lb.

Velocity when discharging against atmospheric pressures and temperatures is shown to be approximately 70 ft. per sec. at 1 in. water pressure, and on the basis that four times the pressure will double volume, the velocity at 1 lb. pressure is approximately 350 ft. per sec. and at 80 lb., 3200 ft. per sec.

Velocity has two general functions in oil burning: To atomize the fuel, and to induce the greatest amount of atmospheric air consistent with good burner, setting and furnace design.

### Velocity for Atomizing by Air

Good atomizing by air action with satisfactory combustion conditions may only be secured with fuel having viscosities below 300 sec. on a Saybolt viscosimeter, and consequently burner and setting design must be premised on air pressure that will produce satisfactory combustion speeds.

Laboratory results indicate that the speed of backfire with a hydrogen-air mixture and at atmospheric temperature and constant pressure is approximately 14 ft. per sec. Under the same condition the backfire speed of the liquid hydrocarbons is probably not over 5 ft. per sec., but heating the air-oil column entering the combustion chamber by radiant heat accelerates backfire speed and with a hot furnace backfire speeds may exceed 100 ft. per sec., although the most desirable speed appears to be 60 to 70 ft. per sec.

The velocity from mechanically delivered air is greatly in excess of desirable combustion velocities, and the intitial velocities must be broken down as rapidly as possible, this being accomplished by atomizer, setting, combustion chamber and furnace design.

### Quantities of Air Required for Burning Fuel Oil

For perfect combustion 1250 to 1700 cu. ft. of air per gal. of fuel are required. The lower figure applies to the lighter oils; the higher to the heavier oils.

Excess air is the source of one of the greatest fuel wastes, but 5 to 10 per cent excess air should mark the maximum limit in oil burning practice. Proper design of atomizer, setting and furnace and the installation of the most suitable equipment in part will greatly assist in reducing the excess air waste.

The author showed graphically in his paper what may be anticipated in percentage of induced or aspirated air with good atomizer and furnace design. The induction property of air under the *A* classification is shown to be small, averaging about 33 per cent, while under the *B* classification it is more than 50 per cent, and with high pressure air under the *C* classification it should be over 80 per cent, approaching 90 per cent of the total air required.

### Comparison of Blowers for Delivering Air

The author discussed at some length the general characteristics of blower types ordinarily employed in oil burning and criticised the use of the fan type blower chiefly on account of the inability of blowers of this type to maintain a constant pressure at constant speed against varying air delivery openings, and further, because of the lack of atomizing properties of air at low pressure, a premium must be paid for a selected fuel that will produce satisfactory operating conditions.

The displacement type blower operates at constant speed and maintains constant pressure. This type blower is criticized chiefly because a change in the delivery areas at the burners is not reflected in the energy required for operation. A relief valve is ordinarily employed on blowers of this type and at constant speed they require constant energy due to the fact that the machine operates at substantially constant volume by the action of relief valve.

The turbine type machine in operation maintains constant speed and constant pressure against variable volume, and the energy varies almost directly with the volume and consequently only that energy required to move the air plus the machine constant is actually used.

A piston compressor operating at the initial pressure of 15 lb. is an excellent type of machine and the cost of an equal volume of air is less than 25 per cent of the cost of air compressed initially to 80 lb. Either the 15-lb. or the 80-lb. compressor, due to the effect of the unloader, absorbs energy only in an amount proportional to the amount of air actually needed plus the machine constant and the air is furnished at substantially constant pressure.

### Comparative Cost of Air

A table of the author's gave in condensed form the results of the study completed in detail as to 13 different sets of conditions.

On an assumed requirement of 1500 cu. ft. air to burn a gal. of oil, this shows that under the *A* classification 1125 to 825 cu. ft. of air are required per gal. of fuel, while under the *B* classification 825 to 480 cu. ft. of air, and under the *C* classification 210 to 180 cu. ft. must be supplied from the mechanical air mover per gal of fuel burned and further that with electric current at 2c. per kwhr., the power cost of supplying air for 1000 gal. of fuel burned varies: $2.70 to $1.75, with air under the *A* classification; $1.75 to $2.50 under the *B* classification, and $1.50 to $6.66 with air under the *C* classification.

No account is taken of the cost of piping various systems, as each layout offers problems which cannot be generalized.

### Conclusion

Consideration of the study shows that the proper method of burning oil is with air under *B* classification or with 15 lb. air under the *C* classification. The conclusion drawn in the paper may be applied with slight modifications to the combustion of pulverized fuel. The study covers specifically only the burning of liquid fuel in such industrial furnaces as use cold air, and no attempt has been made to touch the conditions existing in regenerative or recuperative furnaces or steam boilers. In its complete form the study has thirteen charts, bearing on various factors and essential to a complete consideration of the paper.

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The labor situation in the eighth federal reserve district is reflected in the compilation by the Federal Reserve Bank of St. Louis from reports received from 200 leading employers in 20 of the largest cities in the district. The number of employees of the reporting interests increased 12,498 or 10.3 per cent (men increased 10.9 per cent while women increased 7.5 per cent) between June 30, 1921, and June 30, 1922. On June 30, 1921, the number was 23.2 per cent under normal and on May 31, 1922, the total was 17.7 per cent under normal as compared with 15.3 per cent on June 30, 1922. Wages figures on a semi-monthly basis, increased 0.3 per cent. The average per worker appeared to be $81.90 per half month on June 30, 1921, and $74.45 on June 30, 1922.

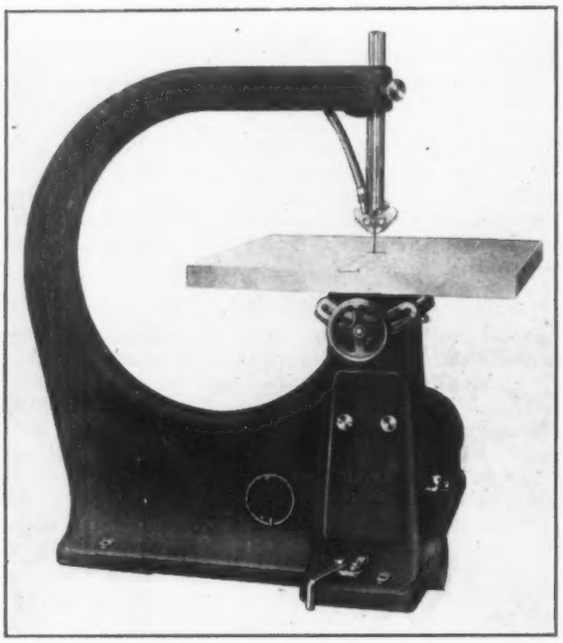
*Abstract of paper read by W. C. Buell, Jr., president Buell-Scheib-Mueller, Inc., consulting and combustion engineers, Pittsburgh, before the Engineers Society of Western Pennsylvania, June 6. Copyrighted, 1922, by W. C. Buell, Jr., and the Engineers Society of Western Pennsylvania.

## Self-Contained Jig Saw

A new self-contained jig saw which represents a departure from the usual design in that there are no overhead belts, no moving parts unguarded and no tension in the saw blade, has been brought out by the Oliver Machinery Co., Grand Rapids. It is primarily adaptable to pattern and other woodworking shops for interior and exterior scroll work on wood, although it may be used on other material.

The new machine, designated as the No. 173, is shown in the illustration. Operated from the front the capacity is up to 36½ in. between the saw and the column. With the saw turned at 90 deg. and operated from the side, work of almost any length or practical width may be handled. The highest work accommodated under the guide is 10 in. The stroke of the saw blade is 3 in., and saws up to 18 in. may be used.

Moving parts of the machine are adequately guarded and the saw blade not being under tension, a broken



New Jig Saw Machine in Which There Are No Overhead Belts, No Moving Parts Unguarded and No Tension in the Saw Blade

blade would be unlikely to cause an accident. Saw blades are conveniently removed and replaced. The clamping device below the table is automatic and the sliding block in the upper guide-way is intended to provide a rapid and convenient means of inserting the saw. Absence of overbalance load is a feature of the new design and is said to assure a quiet running, vibrationless operation and better work.

The machine may be either belt or motor driven, being a self-contained unit in both cases. Bearings and movable parts are made to compensate for wear. The pitman and cross head are of aluminum and complete control of the machine is by means of a conveniently located foot lever.

The table is 39 x 34 in. and is of cast iron. It is mounted on rockers to tilt 30 deg. to right or left and it may be locked in any position by means of a clamp screw and hand wheel provided. When direct-motor drive is employed a flexible coupling connects the shaft and motor.

Two saw guides are provided, one above and one below the table, and these may be turned to permit sawing from either the front or side. A slide dumping device is provided in the table in front and around the saw, with the knob on the under side. This may be drawn back to permit small cuttings to drop through the table and out of the way.

An air blast, by which a continuous flow of air is directed to the front of the saw, is included in the new design.

## New Line of Polishing Machinery

A new line of ball-bearing polishing and buffing machinery, two units of which, a single and a double spindle lathe, are now available, is being brought out by the Mitchell Engineering Co., Springfield, Ohio.

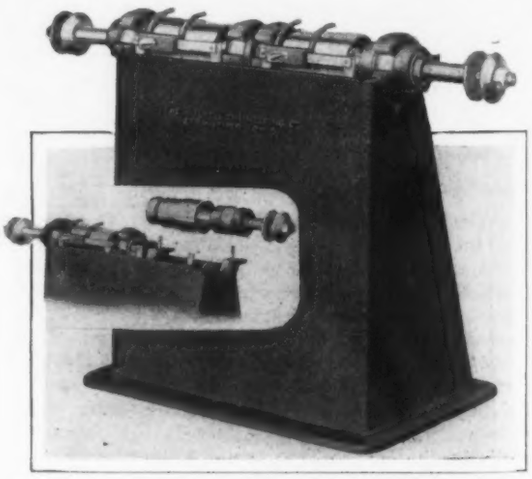
The double spindle lathe, known as the No. 5, is shown in the accompanying illustration. It has two independent spindles which permit the stopping of one without interfering with the other. Another feature is the ball bearing mounting of the spindle, each spindle having three ball bearings and each loose pulley two. Either or both spindles, together with the bearings, may be removed by releasing the bearing-housing clamps and removing the spindle assembly, a ball and socket feature being included to assure perfect alinement.

The machine may be driven from overhead or underneath. The ends of both spindles are drilled and tapped for taper points. The spindles are 2 in. in diameter the full length, except where the wheels are mounted, and the length of each spindle is 32 in., the length of both being 66 in. overall. The distance between wheels is 57 in.

The distance from the tight flange to the side of the machine is 10½ in., but can be longer or shorter as required. The machine will take wheels 2½ in. thick. The height from the floor to center of spindle is 38 in. and size of base at the floor is 26 by 42 in. The weight is 950 lb. net.

A No. 5 machine arranged for motor drive is also available and in this design any wheel speed is obtainable regardless of the motor speed. In this arrangement any standard motor may be mounted in the base of the machine, and the spindles driven by belts. The spindles are started and stopped independently of each other by means of a ball-bearing equipped belt tightening device operated by a hand lever.

The No. 6 machine is a single spindle unit, the spindle being mounted in four ball bearings and the



Double Spindle Ball-Bearing Polishing and Buffing Lathe. The insert shows the manner of mounting spindles with bearings assembled

loose pulley in two. In this case also the spindle, together with the bearings, may be removed by releasing the bearing housing clamps, the ball and socket feature being also included. In this machine the spindle is 48 in. long overall and the distance between wheels 39 in. The size of base at the floor is 20 by 26 in., and the net weight 600 lb.

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Samuel T. Freeman & Co., 1519 Chestnut Street, Philadelphia, auctioneers, will sell at public auction on Aug. 7 at their salesrooms at this address 1742 tons of chill cast forging ingots and 33,405 lb. of finished and rough turned forgings.

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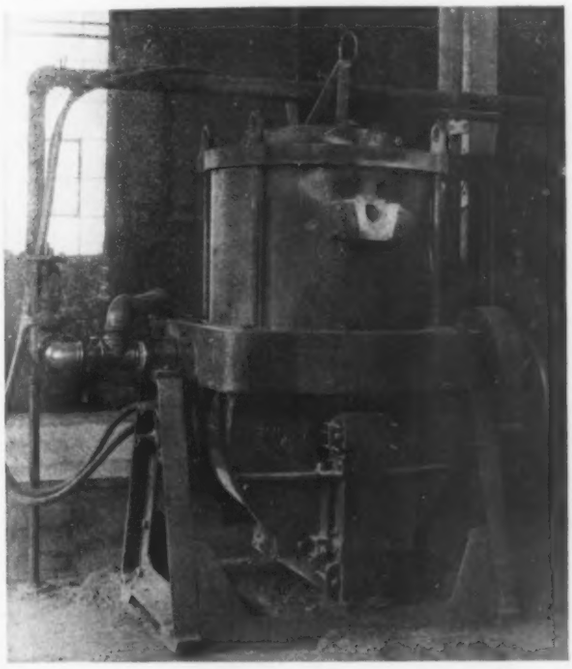
The United States Nickel Co., New Brunswick, N. J., manufacturer of shot and ingot nickel, has resumed operation at its plant in New Brunswick.

# NEW ELECTRIC FURNACE

## Induction Type Developed by General Electric Co. for Melting Non-Ferrous Metals

The General Electric Co. has recently developed and operated for several months an induction type furnace which is particularly adapted to melting non-ferrous metals. It possesses several important features not previously found, it is claimed, in induction furnaces, and calculated to extend greatly the field of application.

The melting chamber, in which the charge is received, melted, and held for pouring, resembles an ordinary crucible, with inclosed top. It has a charging door on one side and a pouring spout on the other. There is also a door in the cover which may be used for



75-Kw. Repulsion Induction Furnace for Non-Ferrous Metals

charging or as a vent when melting oily scrap or other material producing smoke or fumes.

Distinct from this chamber, but communicating with it through ports or ducts, is another chamber in the form of a hollow cylinder encircling a primary winding and one leg of a laminated iron core. Molten metal in this cylindrical chamber constitutes the secondary of a transformer, and the heat in the furnace is generated by the secondary current which flows around the cylinder, through the resistance of the molten metal, when alternating voltage is applied to the primary winding.

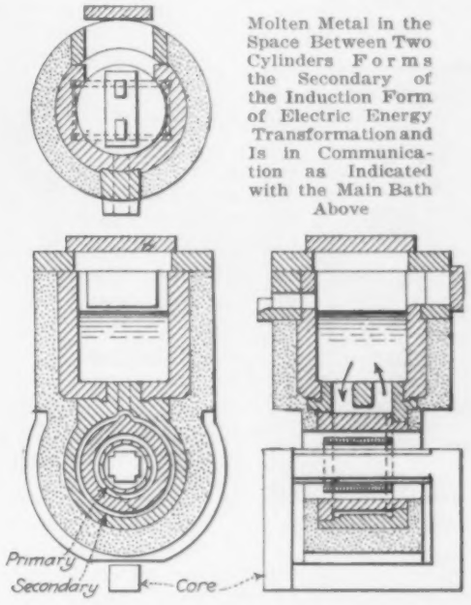
The secondary chamber, with its associated primary and core, is located beneath the melting chamber, partly for compactness of design, and partly because this position is favorable for maintaining a full secondary with a small residual charge in the melting chamber after pouring. This serves to insure uniform power input and uniform rate of heating.

A positive unidirectional circulation between the melting chamber and the heating chamber (secondary) constitutes a feature in this furnace. It is found to result in uniform composition of metal and uniform temperature throughout the bath. This feature has particular value in the melting of finely divided metal, such as borings or light scrap, since the molten material is continually washing against it.

This circulation is effected by the magnetic force of repulsion, which exists between primary and secondary in the transformer. The axial displacement of the primary relative to the secondary causes the fluid pressure due to this force to be greater at one end of the secondary cylinder than at the other. The molten charge flows from the end under higher pressure to the melting chamber, with a return flow from the chamber to the other end of the cylinder, as indicated by the arrows in the drawing. The strength of the circulation may be changed, if desired, by shifting the axial position of the winding.

The refractory lining for this furnace is constructed of three preformed and prefired parts, which are assembled with cemented joints in the furnace. This, in itself, is considered a radical improvement in furnace design, making for a durable lining, and when necessary to replace it, for doing so in short time and little expense. This construction has the advantage of permitting the inspection, before assembly, of all parts of the lining, with special attention to the surfaces which come in contact with molten metal. The lining is surrounded, in the furnace, by layers of heat insulating material which, together with the compact design of the furnace, reduce the radiation losses to a minimum.

When starting the furnace it is necessary to prime it with sufficient molten metal to fill the secondary and give a depth of 2 or 3 in. in the melting chamber. The furnace is therefore at its best when operating continuously, on the same kind of metal, as a residual charge must be retained from the previous heat for starting a new one. When melting intermittently, as for day work only, or for a few heats per day, the residual charge must be kept in a molten condition between heats by applying a low voltage sufficient to supply the radiation losses only. If it is desired to change the metal or alloy which is melted, this may be done by emptying the furnace completely and pouring




Molten Metal in the Space Between Two Cylinders Forms the Secondary of the Induction Form of Electric Energy Transformation and Is in Communication as Indicated with the Main Bath Above

in a priming charge of the new metal which has been melted in some other furnace, or, if it is desired merely to change the percentages of the constituents in the alloy, this may be done by adding an increased percentage of one or more of the constituents to correct the proportions of the residual charge.

The furnace, although of recent development, has been used on red and yellow brass and on copper with, it is stated, pronounced success. Future development is expected to extend the field of application to other metals both ferrous and nonferrous.

For yellow brass the furnace illustrated has a total holding capacity of 1200 lb., with a pouring capacity of 750 lb. The full pouring capacity of 750 lb. can be melted and poured each hour with an input of 75 kw., thus giving a power consumption of not more than 200 kwhr. a ton for brass. For intermittent operation this energy consumption is, of course, increased by the power necessary to supply the radiation loss during standby periods, which is about 10 kw. The power factor on a 60-cycle circuit is about 75 per cent, varying somewhat with the composition of the metal to be melted. The metal loss is almost negligible, being put at less than 1 per cent for yellow brass having a composition of 60 per cent copper and 40 per cent zinc, and

still less for such metals as have higher copper centent.

This furnace will be built in two forms, which are practically the same except for the tilting mechanism and method of tilting. The furnace proper, which is the same in both forms, is mounted on a strong steel frame or yoke, which is provided with trunnions supported in bearings on pedestals. In the form here illustrated, the trunnions are so located at opposite ends of the yoke that the furnace tilts around a line approximately through its center of gravity, the pouring spout moving forward and down. In this form of the furnace, the tilting is accomplished by means of a hand wheel suitably geared to the trunnions. In the other form, the trunnions are located on a line passing through the pouring spout, so that in tilting there is no motion of the spout. This type of furnace is used when it is desired to pour directly from the furnace into molds. In this form of the furnace the tilting is accomplished by means of a motor, which is controlled by a standard drum switch.

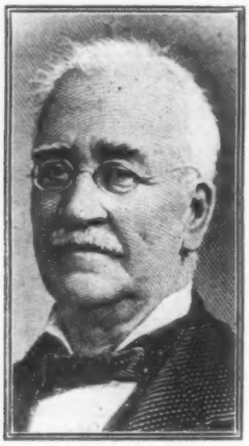
# Rolling Mill Equipment Merger Is Completed

## Mackintosh-Hemphill Co., A. Garrison Foundry Co., Pittsburgh Iron & Steel Foundries Co. and Woodard Machine Co. Now a Single Corporation with Capital of $6,500,000

PITTSBURGH, July 31.—Official announcement has been made of the merging of the Mackintosh-Hemphill Co., the A. Garrison Foundry Co. and the Pittsburgh Iron & Steel Foundries Co., first news of which was published in THE IRON AGE, March 16, 1922, page 743. Included in the combination, which takes the name of the Mackintosh-Hemphill Co., is the Woodard Machine Co., Wooster, Ohio, an interest of the Mackintosh-Hemphill Co. Negotiations were completed more than a month ago, and the official announcement was delayed pending a meeting of stockholders of the Mackintosh-Hemphill Co., approval of which was necessary to the consummation of the deal. The merger has been accomplished through the purchase of the stock of the A. Garrison Foundry Co. and the merging of the Pittsburgh Iron & Steel Foundries Co. and the Woodard Machine Co. in the Mackintosh-Hemphill Co. The capital of the last named company has been increased from $1,000,000 to $6,500,000, consisting of $2,850,000 7 per cent cumulative preferred stock, all of which has been issued, and $3,650,000 common stock, of which $3,000,000, or 30,000 shares of par value of $100, has been issued. This increase will provide for the exchange of shares in the Pittsburgh Iron & Steel Foundries Co. and Woodard Machine Co. into Mackintosh-Hemphill stock. An issue of $4,000,000 27-year 6 per cent sinking fund gold bonds has been authorized by the Mackintosh-Hemphill Co., and of this $3,000,000 has been put out to provide funds to complete payment for the properties of the consolidating companies, for the payment of existing mortgages and bank loans, and to furnish additional working capital for the new company.

A committee on which George S. Macrum, George W. Baum and Joseph E. Fawell represented the Mackintosh-Hemphill Co. and the Woodard Machine Co., and J. Ramsey Speer and H. V. Blaxter, the Pittsburgh Iron & Steel Foundries Co. and the A. Garrison Foundry Co. conducted the negotiations. The officers of the new company are: Pennock Hart, chairman; George S. Macrum, president and treasurer; G. W. Baum, Joseph E. Fawell and L. A. Woodard, vice-presidents; D. H. Baum, secretary, and A. W. Bendig, assistant secretary and assistant treasurer.

This merger has an historical significance, in that it reunites foundry interests which trace their origin to the first foundry established in Pittsburgh. The principal stockholders in each of the companies are descendants of the original owners and their associates. J. H. Ricketson, Jr., and O. G. Ricketson, retiring officers of the A. Garrison Foundry Co., are grandsons of Abram Garrison, to whom the success and reputation of the Garrison company is largely due. Pennock Hart, chairman of the board of directors, Mackintosh-Hemphill Co., is the son of N. F. Hart, one of the founders of Mackintosh-Hemphill Co.; George Macrum, president, is a son-in-law of William Wade, whose name appears prominently in the early history of the Fort Pitt Foundry; G. W. Baum, vice-president, is a son-in-law of James Hemphill; and J. Ramsey Speer and J. McK. Speer are great-grandsons of Joseph McClurg, who founded the Pittsburgh Foundry, and of William McKnight, who with Mr. McClurg operated the plant for a number of years during its early history; Charles McKnight is a grandson of William McKnight. The McClurgs and McKnights also were active in the early history of the Fort Pitt Foundry.

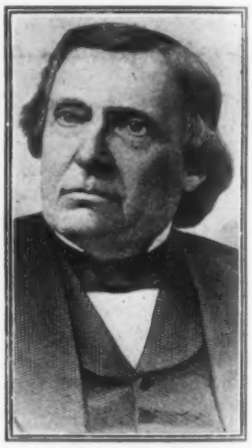


JAMES HEMPHILL

Mr. Hemphill's designs in heavy rolling mill machinery have been responsible for many record outputs in more recent practice.

JOSEPH McCLURG

Mr. McClurg was one of the builders of the first Pittsburgh foundry 119 years ago, and Mr. Garrison's name has been connected with the same business since 1836.



ABRAM GARRISON

It is doubtful if larger contributions have been made to the success of the iron and steel industry than those made by the members of this group. The earliest rolling mill and blast furnace engines, the rolls for the various requirements of the mills, the most effective pipe balls in the earlier days, all testify to the skill and knowledge of those who headed these companies.

### First Foundry in Pittsburgh

The first foundry in Pittsburgh, and probably the first one west of the Allegheny Mountains, was built in 1803, on what is now the site of the Park Building, at Fifth Avenue and Smithfield Street, by Joseph Mc-

Clurg, Joseph Smith and John Gormley. It was called the Pittsburgh Foundry. Shortly after its establishment, or before 1807, Joseph McClurg bought out his two partners, and with his son, Alexander McClurg, conducted the business until 1814. The early years of the Pittsburgh Foundry are particularly interesting, since it was here that many of the cannonballs used by Commodore Perry at Lake Erie, and by General Jackson at New Orleans in the War of 1812, were made. After the end of this war, the foundry was devoted to the production of water pipe, stoves and miscellaneous agricultural castings. The record of the ownership of the Pittsburgh Foundry shows remarkably few changes, and almost a continuous line of descent through the families of the original owners and their associates.

From 1814 to 1822 it was owned and operated by McClurg & McKnight. From 1822 to 1830 by Alexander McClurg & Co. At this time it was merged with the Jackson and Eagle foundries, owned by Kingsland & Lightner. From 1831 to 1840, the firm was known as Kingsland, Lightner & Cuddy. In 1836 Abram Garrison obtained an interest in the business, and in 1840 Mr. Garrison, who was a nephew of Mr. Kingsland, and H. L. Bollman, a nephew of Mr. Lightner, succeeded their uncles, and associating with them H. F. Bollman, conducted the business under the name of Bollmans & Garrison until 1851, when H. F. Bollman withdrew. From 1851 to 1863, the firm was Bollman & Garrison, and from 1863 to 1865 Bollman, Garrison & Co. In 1864 Mr. Bollman retired, and in 1865 the partnership of A. Garrison & Co. was formed. The company was incorporated under its present name in 1887. In 1852 the original location at Fifth Avenue and Smithfield Street was given up, and the foundry was moved to its present location on the south side of the Monongahela river between Ninth and Tenth streets.

Because of the failure of Mr. Garrison's health in 1862, the active management of the business was turned over to his son-in-law, J. H. Ricketson, who held the presidency until his death in 1900. He was succeeded by his son, J. H. Ricketson, Jr., who has had active charge of the company up to the present time.

### First Chilled Rolls

The first chilled rolls made west of the Allegheny Mountains were cast in 1825 at the Eagle Foundry of Kingsland, Lightner & Co. After the merger of this company with the Pittsburgh Foundry in 1830, the importance of the development of rolls and rolling mill machinery was appreciated. Almost the entire capacity of the foundry up to the present time has been devoted to the production of rolls and rolling mill equipment, not only for use in the rapidly expanding steel industry, but also for rolling brass, copper, zinc and other non-ferrous metals. In 1842, the first chilled rolls for rolling sheet brass made in this country were furnished by Bollmans & Garrison to the mills of the Naugatuck Valley in Connecticut. Rolls for this service had previously been imported from England. Mr. Garrison's success in making these rolls resulted in the adoption of American made rolls by most of the brass and copper sheet makers.

The prestige obtained by the manufacture of the first chilled rolls in the Pittsburgh district has been consistently maintained. The names of Pittsburgh Foundry and later A. Garrison Foundry Co. are nationally associated with the development and production of chilled iron rolls. The company also has become prominent in the designing and constructing of mills, roll tables and auxiliary equipment for the smaller structural and sheet mills. However, its efforts have not been confined exclusively to the development of the small mills. It has designed and installed a 152-in. plate mill which requires chilled iron rolls 42-in. in diameter, weighing 72,000 lb.

### Established in 1837

In 1837 Calvin Adams established in Pittsburgh a small iron foundry for making pump plungers and small castings. It enjoyed continued success, though on a small scale, and later the firm became known as the S. Jarvis Adams Co. Under the management of S. Jarvis Adams, the son of the founder, the company built up a reputation as makers of cast iron pipe balls and bell dies used in the manufacture of welded pipe. In 1899 the business was purchased by J. Ramsey Speer, J. McK. Speer, Charles McKnight, H. C. Fownes and W. C. Fownes, Jr. In 1907 the requirements for increased plant capacity were met by the purchase of a site at Midland, Beaver County, Pa., and the erection of a foundry and machine shop of the most modern type. The name was changed from the S. Jarvis Adams Co. to the Pittsburgh Iron & Steel Foundries Co. in 1912 and the interests of H. C. Fownes and W. C. Fownes, Jr., were acquired by J. Ramsey Speer, J. McK. Speer and Charles McKnight.

Adamite, which was conceived by J. Ramsey Speer two or three years previously, was perfected and patented by him in 1913. It was soon demonstrated that Adamite possessed properties of great value when the metal was used for rolling mill rolls and pinions. The plant was equipped with open hearth furnaces and large annealing pits for the efficient production of rolls and other castings.

Since 1913 the attention of the company has been devoted almost exclusively to the production and development of Adamite, and since its first use for steel mill rolls a number of other alloy rolls have followed, all of which have had an influence upon the efficiency and economy of steel mill practice. Adamite has functioned with particular success in castings subject to abrasion, as well as in other special services requiring a close grained homogeneous structure.

The American Adamite Co., which holds the patents to Adamite, is not included in the merger, but will probably license the new company, as it does the United Engineering & Foundry Co.

### Mackintosh-Hemphill Co. History

The Fort Pitt Foundry, now owned and operated by Mackintosh-Hemphill Co., was originally established on or near its present location at Twelfth and Etna Streets, Pittsburgh, by Alex McClurg some time before 1825. Mr. McClurg was succeeded in the ownership of the foundry by the firms of McClurg, Pratt & Wade; McClurg, Wade & Co.; John Freeman; Freeman, Knap & Totten; Knap & Totten; Knap & Co.; Knap, Rudd & Co.; Chas. Knap's Nephews; Knap-Fort Pitt Foundry Co., and in 1878 the property and business was purchased by Mackintosh-Hemphill Co.

The earlier years of the Fort Pitt Foundry were devoted to the manufacture of the miscellaneous iron castings in use at that time. Later the owners undertook the manufacture of engines, locomotives, boats and shot and cannon for the Government. The first locomotive west of the Allegheny Mountains was built here, and before 1850 a number of iron vessels for use in the revenue service on the Great Lakes were completed and launched in the Allegheny River.

In 1841 Knap & Totten, as the firm was then called, received a contract for cannon from the War Department and from that time until the close of the Civil War much was done in the production of munitions. Some of the largest cannon used were cast here, and the two most celebrated makes of the period, the Dahlgreen of the Navy and the Rodman of the Army were practically developed and perfected at the Fort Pitt Foundry. In 1859 James Hemphill, Dr. W. S. Mackintosh and N. F. Hart entered into a partnership and purchased a small machine shop at the corner of Twelfth and Pike Streets. To this enterprise Mr. Hart contributed the financial support, Mr. Hemphill the engineering and practical shop experience and Dr. Mackintosh some valuable patents, including one upon a new type of oscillating steam engine. The partnership was later incorporated under the name of Mackintosh-Hemphill Co., Ltd. In 1878, to meet the requirements of the growing business, the Fort Pitt Foundry, which adjoined the original Mackintosh-Hemphill shop, was purchased and entirely rebuilt. The old wooden lathes used by the Fort Pitt Foundry for turning and boring cannon were replaced by modern equipment for building engines and rolling mills.

In the light of present knowledge, it is obvious that Mr. Hemphill's theory that weight and solidity of construction were fundamental considerations in the de-

sign of heavy duty engines and rolling mill equipment placed him far in advance of his age. The first successful two-high blooming mill was designed and installed by him at the Pittsburgh Bessemer Steel Works, now the Homestead Works of Carnegie Steel Co. The tonnage records of today, which but a few years ago would have seemed utterly impossible, have been achieved largely by the projection and development of the designs worked out by Mr. Hemphill. Upon his death in 1900 his son, N. A. Hemphill, was elected to the presidency of the company. In 1902 he disposed of his interests and retired from active business, Joseph Fawell succeeding him as president. Mr. Fawell died in 1914 and was succeeded by Pennock Hart, who continued in active management of the company until December, 1919, when he resigned to become chairman of the board of directors. George S. Macrum was elected to the vacancy and in addition has held the office of treasurer.

The Woodard Machine Co., Wooster, Ohio, was incorporated in 1916, at which time it acquired the plant and property of the Canton Hughes Pump Co., Wooster, Ohio, and also the Foundries Co. at Orrville, Ohio. Later the equipment at Orrville was moved to Wooster. The company, under the direction of L. A. Woodard, its president, has extended and improved the plant at Wooster to include an iron foundry and an extensive machine shop with special patented equipment for cutting gears and racks with double helical teeth; also equipment for hobbing high speed helical gears up to 12 ft. in diameter. In addition to gear work the company has devoted considerable attention to the development and construction of seamless tube mills, welded pipe mills and mills for hot-rolled strip steel.

## PICTURES OF STEEL MAKING

### Films May Be Obtained from Department of Commerce—To Be Shown at Rio de Janeiro Fair

WASHINGTON, Aug. 1.—World-wide distribution is to be given to the processes of manufacture and welfare work in the American iron and steel industry through a six-reel motion picture film, to be known as "The Story of Steel." It is to be produced under the auspices of the United States Bureau of Mines of the Department of the Interior and the United States Department of Commerce in co-operation with the United States Steel Corporation. The picture is to be presented extensively in the United States and abroad and will acquaint the peoples of the world with the industry in all of its operations.

The story is to begin with the mining of ore and will end with the making of finished products, passing through the transportation period, blast furnace operations and the making of steel by the Bessemer, open hearth and electric processes. In a graphic way the picture will show the production of rails, plates, shapes, axles, rods, wire products, pipe, tin plate and the numerous other products so as to give the audience an intimate study of the processes of manufacture and coupled with it will be a presentation of the activities of welfare and social character conducted by the United States Steel Corporation.

The picture is to be used extensively at the coming world's fair in Rio de Janeiro this year and efforts also will be made by the Government to show it before the leading engineering and other organizations throughout the world. The film will be loaned without cost to all dependable parties. Application for its use should be made to the Department of Commerce, Washington.

## Mining Institute at San Francisco

The 126th meeting of the American Institute of Mining and Metallurgical Engineers will be held at San Francisco Sept. 25-29. The institute is organizing a transcontinental trip for this meeting, the party leaving the Grand Central Station, New York, at 6 p. m. on Saturday, Sept. 9. The trip will be via Chicago, Denver, Salt Lake City, Butte, Spokane, Seattle, Portland, Sacramento and Reno, and San Francisco will be reached on Sunday morning, Sept. 24. Technical sessions will be held at the Engineers' Club in San Francisco on the following day. Most of the week will be devoted to an excursion to Hetch Hetchy, San Francisco Water Project. Those not taking this trip will visit interesting points in the vicinity of San Francisco. The return trip will be by the southern route, with stops at Los Angeles, Kingman, Grand Canyon, Globe, Bowie and El Paso. Chicago will be reached on Oct. 10 and the party will arrive at New York Oct. 11. Among the papers scheduled for the meeting are the following:

"Conditions of Stable Equilibrium in Iron-Carbon Alloys," by H. A. Schwartz, H. R. Payne, A. F. Gorton and M. M. Austin.

"Effect of Nickel Chromium on Cast Iron," by Richard Moldenke.

"Heating and Cooling Curves of Large Ingots," by F. E. Bash.

"Mining Iron Ore in the Adirondacks," by John E. Hodge.

## Employment in Pennsylvania

HARRISBURG, PA., Aug. 1.—Despite the disturbing influence of strikes and coal shortages, the iron and steel trade of Pennsylvania continued to show improvement during the first half of July. The semi-monthly report of Clifford B. Connelley, Commissioner of the Department of Labor and Industry, indicates but 20,050 iron and steel workers were reported employed on July 15, this being slightly more than 60 per cent of those without work on June 15 and more than 78 per cent of those on July 1. The figures for June 15 were 33,250 and for July 1, 25,500.

Unemployment conditions throughout the State, exclusive of in the mine trade and railroad shops, continue to show improvement. Exclusive of those without work in these two trades as a result of strikes, the department reports only 101,705 persons without employment. This shows a reduction of more than 20,000 in the first two weeks of July, 124,665 having been reported without employment on July 1.

The strike of railroad shopmen has resulted in an increase in unemployed metal and machinery workers in some cases in Pennsylvania, while coal shortages, resulting from the strike of miners, have necessitated the closing of some plants. Despite these, seven of the ten employment districts of the State report fewer unemployed on July 15 than on July 1; one reports no change, while two districts report more without employment.

## American Electrochemists at Montreal

Arrangements have been made for a trip of inspection through the industrial developments at Shawmigan Falls, the great electro-chemical center of Canada, at the time of the fall meeting of the American Electrochemical Society at Montreal, Sept. 21, 22 and 23. The program for the technical meeting will embrace from 16 to 20 papers. The projected symposium on electro-osmosis has been abandoned.

## Engineers to Meet in San Francisco

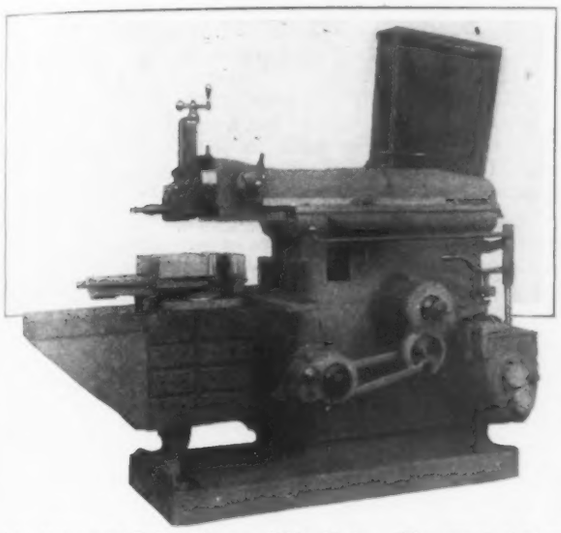
The fall meeting of the American Institute of Mining and Metallurgical Engineers will be held in San Francisco in the week of Sept. 25. F. W. Bradley, San Francisco, has been appointed chairman of the committee on arrangements.

For the Gary, Ind., plant of the National Tube Co., for grading and the foundation work, a contract has been given to the Mellon-Stuart-Nelson Co., contractor, Pittsburgh. The work is expected to take six to eight months.

## New Gear-Drive Crank Shaper

A gear-drive, 24-in. crank shaper known as the 1922 design, and arranged for either motor or single pulley drive, has been placed on the market by the Hendey Machine Co., Torrington, Conn.

The new tool, shown in the accompanying illustration, is of the same general design as the company's cone-pulley type of machines. Among the advantages of the speed-change gear mechanism are that its application permits of greater and more constant power, and also that this design lends itself readily to application of motor drive. The motor is mounted on a bracket at the rear, and silent chain transmission used. Push



The Extension Table Shown Adds 18 In. The speed change gearing is in the oil-tight box at right

button control may be provided. The machine may also be driven directly from the line shaft, no countershaft being necessary.

The speed-change gearing is in an oil-tight box on the right side of the machine as shown, and it is to be noted that the projections of this box are within the floor space required for the machine. There are but eight gears in the assembly, all of which are of alloy steel, hardened and heat-treated. Four speed changes are provided, which with the regular back gears of the machine gives eight speeds.

Gear shifts are conveniently made with a ball-handle lever guided by slots in an H-plate and their manipulation is further simplified by the quick stop and start clutch provided, which is controlled by a long horizontal lever passing to the front of the machine, as shown. The operator manipulates this lever with his left hand while making gear shifts with his right. The driving clutch is of the double angle cone type and engages with the driving pulley, also acting as a quick brake when shifted in the opposite direction. It has a very short motion and gives a quick start and stop to the ram, a feature which saves time and is of great value in setting tools and taking measurements. Index plates conveniently placed show the number of strokes per minute and the approximate cutting speeds produced according to the position of the levers.

The ram can be set in any position while in motion or idle, the length of the stroke being shown on the index provided. The ram has a bearing in the frame of 12¼ by 41¼ in. and the ways for the ram in the frame have an angle of 50 deg. The gib for the ram is combined with the cap in one casting making it very rigid, and permitting complete take-up by a single adjustment in a horizontal direction. The actual stroke of the ram is 24¾ in. The head slide has a binder which may be used as a drag and the swivel head is equipped with a single binder screw.

The cross-feed mechanism is operated at the end of the cross-rail, in all its adjustments, a dial with indicator serving to control the amount of feed while the machine is in motion. The feed may be manipulated while in motion by the ball lever on top of the casting and the lever points in the direction of the table travel. The power down feed is optional and when applied is set by the graduated dial for any feed from 0.005 to 0.060 in. in steps of 0.005 in.

Aside from the usual T-slots, the table has rows of jig-drilled and reamed plug holes at right angles to the faces of the table for blocking and fastening the work. The minimum distance from the ram to the table is 4 in. The vertical travel of the table is 14¾ in., the horizontal travel being 30 in. The top of the table is 17 by 24 in. and the side 17½ by 18 in. A table extension can be provided, giving a total length of 42 in., and a tool post extension can be provided with it. The table may be removed and worked bolted to the saddle, which is provided with finished T-slots. Vise jaws are 14½ by 3 in., and the vise opens 16 in.

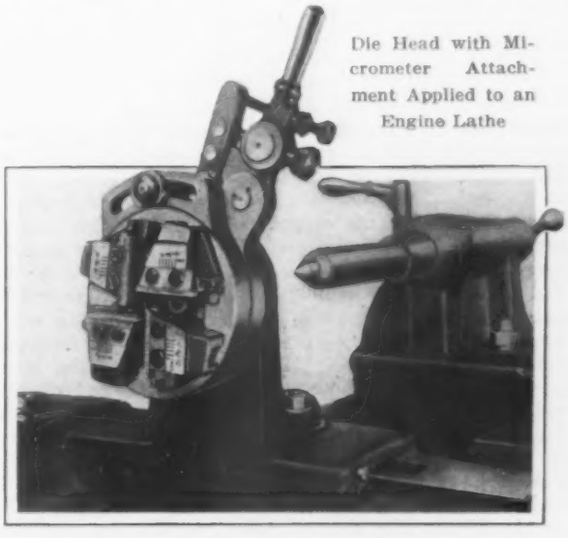
The floor space occupied by the machine is 52 by 107 in., and the weight, net, 5680 lb.

## Die-Head with Micrometer Attachment

A stationary type die-head with micrometer attachment, the general arrangement of which is shown in the accompanying illustration, has been added to the line of the Landis Machine Co., Waynesboro, Pa. It is intended to be particularly useful in connection with cutting threads which require one or more roughing cuts and a finishing cut, the micrometer attachment permitting the setting of the die-head so that the same amount of metal is left on all pieces for the finishing cut.

The head is graduated for both right and left hand and for all sizes of bolts and pipe within its range, the graduations being stamped on the outer surface of the closing ring above the circular slot, as shown. The die-head is adjusted to size by loosening the clamping nut and bringing the index mark opposite the required graduation on the scale, further adjustment being made, if required, through the micrometer attachment.

The micrometer attachment is adjusted by backing off the upper, or stop screw, after first loosening the



Die Head with Micrometer Attachment Applied to an Engine Lathe

stop screw lock nut; the micrometer screw, below these, then being adjusted for increasing or decreasing the diametrical adjustment. Turning the micrometer screw in a counter-clockwise direction, causes the upper part of the link shown to swing to the left about the lower center, which pulls the closing ring to the right and increases the diametrical adjustment. Turning the micrometer screw in the opposite direction causes a counter movement of the link and decreases the diametrical adjustment. After the micrometer adjustment is made, the stop screw is set against the link and locked in place with the lock nut.

For the roughing cut the die-head is adjusted by turning the micrometer screw in a counter-clockwise direction until the desired diametrical adjustment is obtained, the stop screw being left in the locked position. Two or more roughing cuts can be made by decreasing the diametrical adjustment of the die-head

in one or more increments through the micrometer screw. When the roughing cut has been made, the micrometer screw is turned back in a clockwise direction until the link comes against the stop screw, the die-head then being set for the final diameter and is ready for the finishing cut.

The die-head described may be applied to turret lathes, engine lathes, and hand operated screw machines, being also applicable to all lathe types of threading machines where the work is revolved and the threading head remains stationary. In applying the head to a turret lathe it is equipped with a shank to conform to the dimensions of the socket of the turret, and used in connection with the cross slide of an engine lathe a special knee bracket is necessary, a special dead center being also required. The work can be gripped in a chuck and threaded without the use of the centers when the shape of the part makes it necessary.

## PROTECTION BY ALUMINUM

### Coated Grate Bars Shown to Have Four to Six Times Life of Bars Untreated

In the issue of the *Revue de Metallurgie* for May, 1922, there is a short article by Leon Guillet giving the results of experiments obtained with metal protected by an aluminum coating.

This coating was somewhat similar to that well known in this country under the title of calorized, but instead of being obtained by packing the articles in powdered aluminum and other agents and raising to a high temperature, the articles were coated by means of the Schoop process. This process consists in melting the metal used, whether aluminum or zinc or whatever it may be and projecting the melted metal in a fine spray against the article to be covered. The coating so obtained when aluminum is used has been given the name of "aluminage." The results obtained with metal so protected do not appear to be comparable with those of calorized metal, except in particular cases and especially when the temperature reached by the pieces is low.

Two applications have been noted during the last few months which are of sufficient interest to merit attention. They consist of fire grate bars and also of cast iron stoves. In both cases the life of the samples was considerably increased.

#### Fire Grate Tests

First in regard to fire grate bars; the tests have been chiefly made in Denmark and Germany, although tests are being carried out in France especially with locomotives of the Chemins de Fer de l'Etat. In 1919 a preliminary series of tests were made in Germany with grate bars, on which a coating of pulverized aluminum had been made. In this case freight engines of the Prussian State railroad were used. The results showed that the resistance of the grate bars so treated were six times greater than that of untreated bars. In 1920 another series of tests were made with four express locomotives, one-half of the grate bars in each fire (20 bars) were covered with aluminum and the others were untreated. Every four weeks the bars were weighed and photographed. At the end of the first four weeks the untreated bars lost on the average 250 gr.; after 8 weeks 1600 gr.; after 12 weeks 2050 gr. per bar. After a period of six weeks some untreated bars had to be replaced, and after sixteen weeks not any of the original twenty untreated bars remained. At the end of four months none of the treated bars were attacked and the loss in weight was insignificant.

#### Tests With Cooking Stoves

In Denmark the State railroad carried out a large number of similar tests in the autumn of 1920. On the other hand the Danish company Soyakagefabrik carried out a very interesting series of experiments on cooking stoves. After 2000 hr. the firepot was completely corroded and needed replacement. In the same case a similar plate covered with aluminum remained practically intact after 2000 hr. of service. Also some tests were made on tuyeres; those covered with aluminum retained very smooth faces and were hardly, if at all, attacked by the fire.

To sum up the tests made under the conditions given above, the treated samples gave at least four times the service and, as a general rule, six times the service of untreated pieces.

At the same time it would appear from experiments that are not yet finished that if the sample is carried to a high temperature the protection cannot compare with that obtained with calorization. The layer is detached easily and the protection fails. It should be added that, in regard to the fire grate bars, the information obtained is unanimous in regard to not only an important increase in the life of the bars but also that the clinker is much more easy to remove and does not stick so hard as with uncovered grate bars. This is extremely important and is not to be neglected.

The information given above comes from well authorized sources and it appears certain that the practical tests being made in France will confirm it.

G. B. W.

## Flexible Radial Grinder

The flexible radial grinder shown in the accompanying illustration, is a recent development of the Stow Mfg. Co., Inc., Binghamton, N. Y. It is designed for

**Flexible** Radial Grinder for Operation of Abrasive Wheels and Wire Scratch Brushes on Large Castings

grinding with maximum power over a large area, for the operation of abrasive wheels and wire scratch brushes on large castings, automobile bodies and similar applications. It may also be provided for drilling or with a screwdriver for assembling.

The grinder hangs from the ceiling and no countershaft is necessary, as it can be belted directly to the line shaft or the motor. The weight of the flexible shaft is counterbalanced, as shown, so that the operator is free at all times and may have the tool within easy reach and control. Five sizes are available.

## French Iron and Steel Exports Increase

Exports of pig iron and steel from France during the first four months of 1922 were 818,167 metric tons, valued at 391,120,000 francs, as compared with 674,939 metric tons, valued at 350,576,000 francs, during the same period of 1921.

Imports of pig iron and steel into France in the first four months of 1922 totaled 269,784 metric tons, valued at 214,328,000 francs, as compared with 189,926 metric tons, valued at 224,868,000 francs, for the same period of 1921.

The Peck, Stow & Wilcox Co., Southington, Conn., manufacturer of hardware and mechanics tools, at its annual meeting last week elected the following officers: L. E. Sichthorn, president; T. J. Ray, vice-president; George S. Case, secretary; and E. N. Walkeley, treasurer.

# Economy Features of Electric Foundry*

## Locating Furnace and Supply Bins—Handling Materials—What Is Involved in Caring for Electrodes—Laboratory Facilities Necessary

BY CHARLES WELLMAN FRANCIS

PROBABLY the most essential requisite of the installation of an electric furnace in the foundry is its location or relative position in the shop. Most foundry buildings of modern type construction are built with a main bay ranging in width from 40 to 65 ft. with a side bay or leanto on each side, of 20 to 30 ft. In the main bay are located overhead traveling cranes.

One of the best locations for the furnace is to place it just inside the main bay of the building, so that when the crane trolley is at its maximum position at the side, the crane hook will lift vertically the electrode farthest from the center of the building. This will govern its position relative to the width of the shop and leave it placed so that the maximum floor space is available between it and the opposite side of the main bay.

As to its position lengthwise, it is advisable to place it close to one end of the shop, for with the furnace in this position we have a continuous chain, so to speak, of raw material to finished product from the furnace end of the building to the other, respectively. This location is practical for the larger size furnaces. The only great disadvantage of this location is that valuable floor space under the overhead cranes is lost. However, this can hardly be rectified because electric furnaces of 3 tons capacity or more require at least 20 ft. of headroom to facilitate the raising of the electrodes, and this headroom can only be had, as a rule, under the cranes in the main bay.

Provided there is sufficient headroom, it is economy to place smaller size furnaces in one of the side bays of the shop, with the pouring spout pointing across the shop, and extending into the main bay to such a position that the crane trolley will give a vertical lift to the furnace ladle as it is raised from the pit. This location makes all of the floor space in the main bay available for molding and shaking out castings. An electric hoist can be erected alongside of the furnace in the side bay for raising the electrodes clear of the roof-eyes, as is often required when a roof has to be replaced, and subsequently for handling the roof.

### Locating the Scrap Bins

The next question of vital importance is the handling of the materials, principally the scrap. Unless this problem be properly worked out, an enormous amount of money can be thrown away needlessly. It is advisable to have scrap bins built of brick and concrete construction close to the railroad siding, the top level of the side walls of the bins being the same height as the top of the standard gage gondola cars in which scrap is usually shipped. An electro-magnet can be erected at a convenient point to unload the steel scrap from the railroad cars to the bins.

An industrial railroad of narrow gage can be readily built along the face of bins, turning at right angles and passing into the shop through the side bay and thence to a point accessible to the furnace charging door. Just inside the door entering the side bay, a suspension platform scale can be readily located for weighing the scrap while it is being carried in small scrap cars of a dumping type. With this layout, the electro-magnet can be used for the double purpose of unloading the scrap into the bins and loading the small cars from the bins. By this means two men, one for operating the magnet crane and another for handling the industrial cars, can take care of all the scrap up to the point where it is piled near the furnace charging door, whereas by another arrangement it would require a regular yard gang of two or three times this number of men for unloading the scrap by hand to the bins.

### Hand Charging of Furnace

In the author's opinion the most economical means of charging the furnace is by hand shoveling, provided the furnace is a 3-ton furnace or smaller, and the scrap is of a shoveling type. About three years ago the writer personally conducted a test to determine the time required for charging a 3-ton furnace by hand. This test covered a series of 30 heats, which were the first heats taken from this furnace. A green crew of three laborers was used and the charges consisted of about 40 per cent foundry scrap, the remaining 60 per cent being made up of heavy axle turnings and boiler plate punchings. The shortest time required to charge this furnace with 6000 lb. of scrap was 8 min., and the longest time was 14 min., the average time per heat being 12 min. As long as scrap can be handled at this rate there is no need for considering a charging machine which is cumbersome and in the way in a small shop, where space is exceedingly valuable. The crew of laborers which is used for charging the furnace can be used in the cleaning room or on the shakeout floor at intervals between heats, thus relieving the labor costs on the furnace department.

Aside from the scrap, the handling of the refractories and electrodes is the next problem of greatest importance. Silica roof bricks of special shape are easily broken and for this reason they should be stacked, together with the remaining types of brick, in a dry room or shed, which is not accessible for any other purpose, thoroughly protected from the weather, and in close proximity to the furnace.

### Inspecting and Storing Electrodes

Electrodes should be stored under the same conditions as bricks, and they should be laid in tiers of parallel rows with several smooth boards laid parallel under the bottom row, to protect them from the dampness of the floor. The most important part of an electrode is the end, because it forms the joint between two sections of electrode. If the edges on the ends are chipped or broken, the efficiency of the electrode is greatly diminished, simply because the efficiency of an electrode depends on its current-carrying capacity per square inch of sectional area.

When a shipment of electrodes arrives at the plant, it should be subjected to a rigid inspection as each electrode is being unloaded from the car. Four main points should be considered during this inspection. First, that each electrode is free from linear cracks, which sometimes extend almost the entire length of the electrode. Second, that the threaded sections or the female ends of each electrode are concentric with the periphery or circumference of the electrode. Third, that the ends of the electrode are as nearly a perfect

*An article by Mr. Francis covering the choice of the electric furnace appeared in the issue of July 27, page 201.

circle as possible instead of being oval or elliptical. Fourth, that the end edges and threads are not chipped or broken in any way.

When the electrode ends are not concentric an overlapping at the joint is in evidence, giving a smaller sectional area of contact and subsequently less current-carrying capacity, which causes the electrode to overheat at the joint and pencil off. Chipped or broken ends and threads will cause the same troubles as mentioned above, while oval electrodes will often jam in the roof cooling glands and be the means of the automatic regulators functioning improperly. It is advisable to number or letter the corresponding ends of the electrode screws and electrodes, so that when they are put on the furnace in a certain order, the joints made are the best possible. A good electrode joint is probably the essential feature of real operating economy, as a large portion of furnace delays are caused by broken electrodes, portions of electrodes in the bath, etc., all of which are generally caused by a carelessly made joint.

### Quick Test Laboratory Advocated

Probably no one can appreciate the value and saving derived from a quick-test laboratory more than the electric furnace melter. The initial expenditure on such an installation is little or nothing compared to the results obtained from it. Any number of foundries send drillings from a cup test to some outside laboratory for a determination of their final analysis. For preliminary carbon tests they rely solely on the melter's judgment of a fracture test piece. Often troubles arise during a heat when it is next to impossible to obtain a good fracture test, and it is in such emergencies that the chemical laboratory exemplifies its real value, for a laboratory test can be taken from any test sample that comes from the furnace. Another real value is that all incoming scrap can be quickly analyzed before the railroad cars are unloaded and the shipment rejected or accepted as the case may be. Our readers can judge for themselves whether the expenditure of a few hundred dollars is justifiable under such conditions as have been mentioned.

The author has endeavored in this writing to set forth a few points of value to be considered when a new electric furnace installation is contemplated. Foundry superintendents find that it is not the easiest matter to obtain improvements after a new installation is completed and in operation. If features which have been mentioned in this article are therefore included in the construction and installation costs, they will be greatly counterbalanced by the saving in melting costs, to say nothing of eliminating the confusion and other difficulties which accompany the installation of these features while the furnace is in operation.

## OTIS STEEL CO. PLANS

### Strip Department Will Be Included in Additions to Plant Capacity

The Otis Steel Co., Cleveland, in addition to the erection of a steel plant at its Riverside works to round out the present equipment, as announced in THE IRON AGE last week, will add a hot and cold-rolled strip department with an annual capacity of 80,000 tons. Extension plans provide for four 100-ton open-hearth furnaces, a 40-in. blooming mill and a 24-in. sheet bar mill to manufacture billets, sheet bars and slabs for its plate, sheet and strip mill departments. With the proposed extensions the company will have a complete steel making plant. It has been manufacturing pig iron since its purchase of the two blast furnaces of the Cleveland Furnace Co., in 1919, but at present has to buy its semi-finished steel from other producers. It is announced that on completion of the new units the company will have an annual capacity of approximately 534,000 tons of finished steel products.

To provide funds for the extensions and $1,000,000 additional working capital, The Otis Company is offering through investment houses, a $5,000,000 issue of first mortgage, 25 year, 7½ per cent sinking fund gold bonds and proposes to issue 330,000 additional shares of no par common stock which will be offered to present stockholders at $11 per share. A special meeting of the stockholders will be held Aug. 25 to take action on reducing the present authorized amount of capital stock to the amount outstanding, this being required by law before an additional stock issue can be voted. Another stockholders' meeting has been called for Sept. 18 to approve the proposed increase in common stock.

## Labor Supply and Immigration

Only 68 1-3 per cent of the number of aliens permitted under the 3 per cent limitation law were admitted to the United States in the fiscal year ended June 30, according to figures of the Bureau of Immigration. The number admitted was 243,953, out of a possible 356,995. This compares with 805,228 admitted during the preceding year.

In the five-year period, 1910 to 1914, admissions aggregated 5,174,701, an annual average of 1,034,940, and the excess of arrivals over departures added 3,731,809 persons net to our population, at an average yearly rate of 746,362. In these five years more than 1,500,000 common and in excess of 500,000 skilled workers arrived in this country. From 1915 through 1919 the total net immigration was only 554,456, and the largest number of arrivals in one year was 326,700, in 1915.

According to the 1910 census, three-fifths of our bituminous coal, 65 per cent of our copper, more than half of our iron ore, three-quarters of our construction work, three-fifths of our slaughtering and meat packing, 85 per cent of our sugar refining, between 60 and 70 per cent of our woolen and cotton goods, nearly three-quarters of our clothing, more than half of our iron and steel, and 67 per cent of our leather were produced with the labor of foreign-born wage earners. Moreover, our railroad and highway building, as well as other construction requiring unskilled labor, has been done for the most part by this type of worker.

## Ashtabula Steel Mill Soon to Operate

The plant of the Ashtabula Steel Co., Ashtabula, Ohio, a sheet interest, is being completed and initial production will be turned out early in August. The product will consist of sheet steel, black and galvanized, flat and corrugated. The plant has eight pair and sheet furnaces, now ready for firing, and equipment for pulverizing coal. Pickling and galvanizing machines have been installed. Sheet bars will be purchased on the market.

## Machine Irons Out Buckles in Sheets

The MacKay Machine Co., Youngstown, Ohio, engaged in general machine and job work and in building special machinery, has evolved a roll leveler of its own design to roll the buckles and strains out of sheets. Installations have been made for the C. R. Wilson Body Co., the Packard Motor Car Co., the Ford Motor Co. and others. The machine has 17 rolls in bronze bearings, and operates at 80 ft. per minute in the buckling departments of several mills.

## Sales of Leather Belting

Domestic sales of oak leather belting, as reported by the Leather Belting Exchange, and representing about 60 per cent of the total product, amounted to 103,890 lb. and $164,250 for the week ended July 15, compared with 81,987 lb. and $134,542 for the preceding week and 52,708 lb. and $89,447 for the corresponding week in 1921. Included in the current figures are 64,311 lb. of first quality, at $103,363, and 17,308 lb. of waterproof, at $32,717.

# Use of Steam for Cooling Sheet Rolls

## How Best to Apply—Better Cooling Method Needed to Reduce Roughening of Roll Surface—Deep Chilled Rolls Favored

BY GEORGE C. BROWN

SOME years ago the limit on sheet mills for double iron was 135 pairs for 8 hr. work. This limit was placed there by the Amalgamated Association of Iron and Steel Workers. The standard size roll at that time was 24 in. in diameter. This size was thought to be large enough to take care of the amount of heat that that number of pairs would add to the rolls, but at a convention held in 1903 or 1904 this limit was removed and the crews were allowed to turn out any number of pairs they could in the 8 hr.

It was then found that 24-in. rolls were not large enough to take care of the increased tonnage, so the

The Illustration Shows a Sheet That Was Rolled on a Mill Where the Steam Was Applied Through Pipes Paralleling the Back of the Roll. The stripes show where the steam has pitted or roughened the roll. The effect is just as bad when the steam is applied through a hood under the foreplate, but with this method the entire surface is roughened instead of striped

diameter of the roll was raised to 26 in. After a time the men became so efficient in their work and by taking advantage of some minor details, such as one pass on the run over, etc., where two passes were given under the old method, they were enabled to turn out still greater tonnage and 26-in. rolls were found to be too small, making it necessary again to increase the diameter to 28 in. and 30 in., which latter size is in common use to-day.

Where this limit of the diameter of the sheet roll is I am unable to say, but it would seem that we have about reached it; but even with this larger size roll we have to resort to artificial means of cooling. For this purpose we use steam, which is a crude means, as there is no question that it roughens the surface of the rolls. Especially is this true where the chill is light, say, of ½ or ¾ in. in depth and soft or medium in hardness. This roughness from steam is not so apparent where the chill is of a good depth and reasonably hard. The effect on the roll is just the same, but the harder chill of course offers a greater resistance and will run a longer time or make a greater number of heats before becoming rough.

Again is this soft light chill bad in that it picks up iron from the pairs while roughing and makes a rough pitted sheet when finished. In heavy orders such as Nos. 26 and 25 gage double, it is almost impossible to make a first-class sheet on a medium chilled roll, where one has to use a good head of steam, as is generally the case. It keeps a roller riding a polishing block almost continually, at least every two or three heats, if he wants to have good results. This cuts down his tonnage, as it takes from 5 to 10 min. to polish a roll.

It is generally supposed that there are less breaks on soft than on hard chilled rolls, but the way we work to-day continuously for 8 hr., I do not think there is much more risk on the hard chill than on the soft, and I know with the harder chill better results are obtained, both in the iron opening and in smooth sheets.

Steam is applied to the rolls in two ways: one through a funnel shaped hood under the fore plate; the other by means of a ½-in. perforated pipe paralleling the bottom roll under the guides, and one parallel to the top roll just above the guides. These perforations are about 1 in. apart and the pipe is ½ in. from the rolls.

There are no set rules that can be laid down for using steam, that is, I mean, no roller can follow a set of rules that will enable him to do good work and be reasonably safe from roll breakage at all times, for the roller who sacrifices his work by putting on a full head of steam continuously in order to keep from breaking rolls will not last long as a sheet roller. He will not be a profitable workman to the firm for which he works. Experience with the use of steam for a number of years has taught the writer that the following methods will be found good in the majority of cases:

> When you begin to rough your heat down, turn on a head of steam sufficient to give you the desired circle in the end of your pair. Every roller will know just what that circle should be. Let that amount of steam remain on during the roughing of the heat. When you come to the run over, turn about one-half the steam off. After the heat is run over and just before you rough your three finishers or whatever number you need, turn your steam up to where it was during the roughing of the heat. After the finishers are roughed down turn your steam down again for the finish to the same amount that you had on the run over. If you follow this out during the turn you will find that your rolls have changed shape very little. Expansion and contraction in the minimum are the main factor in preventing roll breaking.

It is thought by some that a sheet roll absorbs as much if not more heat on the run over and finishing

than it does on roughing because the iron is in contact with the rolls much longer. But this, I believe, is an error. If a sheet roll would absorb as much heat on the run over and finishing as in the roughing, why does one rough down three finishers after the run over before finishing to expand the rolls to the same place they were during the roughing? Then, again, if one will follow the record of rolls that were broken on the finish, he will find that 7 out of 10 were broken on the first pack out and in the first pass, showing that the rolls have contracted or lost heat between the time of roughing and finishing.

If one would slack the screws an inch or two and put hot packs through the rolls all day he would not add 200 deg. of temperature to the rolls, for this reason it is evident the rolls take on heat through pressure rather than by contact. The reduction is much greater on the roughing than on the finishing. For example, take a ¾-in bar, give it five equal passes on the chill rolls, making about 20 per cent of a draft; then, again, take a ½-in bar, give it five equal passes about 20 per cent draft also. The ¾-in. bar will be reduced ⅛ in. on each pass, while the ½-in. bar will be reduced only 1/16 in. Yet the draft is the same on both bars. The ¾-in. bar will add much more heat to the roll than the ½-in. bar, though the ½-in. bar may have been hotter on the roughing than the ¾-in. bar.

If from a pack that has broken a roll a piece is cut out just where the break has occurred, it will be found that it is almost impossible to detect with the naked eye the difference in thickness between what has gone through the roll and that which has not, yet the micrometers will show a draft from 30 to 35 per cent. From these facts it can readily be seen that it is reduction rather than contact that adds heat to the rolls.

The method given for applying steam is only for double iron. For single iron and for some of the heavier gages the fixing of the steam supply can be made at the starting of the turn to give the desired shape in the end of the pair and let it remain on during the 8 hr. Of course, no roller who expects to do good work will use as much steam on the lighter gages, such as on No. 24 single and No. 30 double sheets, as he would on heavier.

I said in the beginning of this article that steam was a crude method of cooling sheet rolls. The best that can be said for it perhaps is, that it is the less of two evils and that there will be a better method invented some day. I think myself that the better way would be through an application of warm air to be used as we use steam to-day. This would not pit the sheet rolls due to lack of moisture and I think it would reduce the heat just as effectively in the roll without the evil effects.

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## AN ENGINEERING MUSEUM

### Movement to Establish One at the Smithsonian Institution at Washington

After the DeLamater-Ericsson commemoration on March 9, the sixtieth anniversary of the battle between the Monitor and Merrimac, the American Society of Mechanical Engineers appointed a committee to cooperate with the committee in charge in making a collection of historical material connected with Cornelius H. DeLamater and Capt. John Ericsson (during their 50 years' association [1840-1890] as the leading factors in the DeLamater Iron Works, at the foot of West Thirteenth Street, New York) H. F. J. Porter, chairman of the joint committee points out that these works were the largest institution of their kind in their day and there during the period mentioned developments took place in naval, merchant-marine, ordnance and industrial engineering "which helped materially to raise this nation from comparative unimportance to its recognition as the leading nation of the world, and yet of the details of this accomplishment there is no record. In fact, there is nowhere a tangible record of any of the steps whereby this country has attained its present commanding position in the world."

In seeking for a permanent depository for the DeLamater-Ericsson historical collection the committee conferred with the Smithsonian Institution at Washington and its secretary sent with his reply his latest report on the National Museum which is under his custody. The concluding paragraph of this report reads as follows:

> Museums devoted to history, art and the natural sciences are established in all of the larger nations of the world and many of them have established, in addition, educational museums of engineering and industries. Thus England has her South Kensington Museum; France her Conservatoire des Arts et Matiors (at Paris) and Germany her Deutsches Museum (at Munich), but nowhere in this nation of ours, the most advanced in the application of the engineering and mechanical arts, is there a similar institution. The commanding place in the world which the United States has reached in the short space of seventy-five years is due largely to the full development and utilization of mechanical power in the exploitation of her natural resources. It is this that has made it possible for the people of the United States to enjoy a standard of living far and above that under which the peoples of the rest of the world exist, and still no public sign of appreciation, either national or otherwise, is to be found anywhere. What more suitable monument could there be, therefore, than a Museum of Engineering and where could there be found a more logical place for it than as a part of the great National Museum?

The Smithsonian Institution then not only solicited the placing of the DeLamater-Ericsson historical collection in its National Museum but proposed the cooperation of the committee in establishing the nucleus there of a great national engineering museum comparable to the foreign museums to record the accomplishments, in the upbuilding of this nation, of its engineers, who are only now beginning to secure a recognition of obligations too long deferred.

Notwithstanding all that the engineers have done for this country, it was not until 1920, Mr. Porter adds, that one of them, James B. Eads, was deemed worthy of being associated with the notables in other vocations in the Hall of Fame. "The first monument to an engineer is only now being erected and will be dedicated to Capt. John Ericsson in 1924 adjoining the Lincoln Memorial in Washington. The first engineer to be given a chair in a President's cabinet is Mr. Hoover, in the present administration."

The committee has responded that it realizes the responsibilities to be incurred in assuming the performance of such a task as has been proposed, but feeling that now is the time to do it, for every day passing is one during which the records needed are being lost and men who were leaders in events are dying off, and feeling that with the backing of the American Society of Mechanical Engineers, it is strong enough to do it, it has started the movement.

At the annual meeting of the American Society of Mechanical Engineers, there will be exhibited a part of the historical collection in the Engineering Societies' Building. Such of it as would be appropriate as representing the work of Capt. Ericsson will be sent as requested to the tercentenary of the city of Gothenburg, Sweden, to be held there next summer. On its return it will go with the rest of the collection to the National Museum at Washington.

It is desired to make this a national movement in which every engineer in the country will participate. Engineering societies and alumni associations of engineering schools are requested to communicate for further information with the joint committee on the National Engineering Museum, Engineering Societies' Building, 29 West Thirty-ninth Street, New York.

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A meeting will be held within the near future for the election of officers of a recently formed western Massachusetts branch of the American Society of Mechanical Engineers.

# Rates on Eastern Iron Ore Reduced

## Schedule Which Prevailed Prior to August, 1920, Restored —Ex-Lake Ore Rates Unchanged by Interstate Commerce Commission

BY L. W. MOFFETT

WASHINGTON, Aug. 1.—Eastern iron and steel and iron ore interests, by a decision of the Interstate Commerce Commission handed down last Thursday, won their fight for a 28 per cent reduction on ore rates from Eastern mines, while iron and steel interests using Lake Superior ore lost in their efforts to get a 20 per cent reduction in rates. The decision, in addition to ordering suspended tariffs carrying the 28 per cent reduction in Eastern ore rates to go into effect on Aug. 28, also ordered that tariffs proposing a similar reduction in rates on imported ore become operative on that date. Suspended tariffs proposing the 20 per cent reduction on ex-lake ore rate were ordered canceled on or before Aug. 29.

The effect of the reduction is to restore the Eastern domestic and import ore rates to the level prevailing prior to the 40 per cent increase that went into effect on Aug. 26, 1920, and to place the rates on these two classes of ore on the same relationship that obtained before that increase was made. The 28 per cent reduction is to replace, and is not in addition to the 10 per cent decrease that became effective on July 1, 1922, by the general rate reduction decision of the commission. The ore decision has no effect on reduced import ore rates that are already in effect, such as the rate of $1 per ton from Constable Hook, N. J., to Bethlehem, Pa. It does, however, eliminate the 40 per cent increase of Aug. 26, 1920, where this had not been done. An instance of this is the $1.26 rate from Perth Amboy, N. J., to Bethlehem, which will become $1 on Aug. 28.

The Eastern and imported ore tonnages affected by the decision giving it the lowered rates, based on 1920 consumption, were about 2,096,321 and about 1,228,496 tons, respectively, while the ex-lake ore tonnage, on the same basis, which was denied the proposed reduction, was 35,700,000 tons, according to the estimate of the commission.

### Lake Interests Disappointed

The decision, while a source of gratification to Eastern consumers and mining interests, and a distinct disappointment to the large consuming interests of ex-lake ore in Ohio, western Pennsylvania, West Virginia and Virginia, was fully concurred in by six members of the commission, while the remaining three, Commissioners Meyer, Aitchison, and Potter, concurred in the decision as to reducing the Eastern and imported ore rates, but sharply dissented as to the refusal to reduce the ex-lake rates. They maintained that these rates should also have been reduced 20 per cent as proposed in the tariffs which have been ordered canceled. They do not agree with the majority report that the new adjustment is necessary to a proper relationship between Eastern and ex-lake ore rates and rates on coal from and to certain points, or that the proposed ex-lake reductions would be an undue burden on the revenues of the carriers or on other traffic. The carriers, it will be recalled, also participated in the efforts to reduce the rates on all the ore traffic involved.

The commission did not find any relationship between upper lake ore rates to Lake Superior docks to the other rates under discussion. The upper lake rates, however, are the source of a pending case in which ore interests are seeking reductions, which the railroads serving the mines are opposing. The decision also did not involve the proposal of Buffalo district iron and steel interests, which opposed ore rate reductions while coal rates to their plants were unchanged, to establish minimum rate on ex-lake ore rates. The Buffalo interests, however, were not opposed to reductions in Eastern ore rates themselves, but were contending for lower coal rates, which were granted in part recently.

The decision covered three complaints. One was the general case of iron and steel and railroad interests, except the Buffalo iron and steel makers, seeking the 28 per cent reduction in Eastern rates, and the 20 per cent reduction in rates from Lake Erie ports. The other two were what are known as the Wharton Steel Co. and Ringwood Co. cases. The Wharton Steel Co., operating the Replogle mines, near Wharton, N. J., and the Ringwood Co. in separate cases, later consolidated with the general case, had also been seeking the reductions, which were granted, on rates to furnaces in eastern Pennsylvania and New Jersey, which, it was charged, were unreasonable, unjustly discriminatory, and unduly prejudicial in comparison with the rates accorded to competing mines in Pennsylvania, New Jersey, Minnesota and Michigan, and at Sterlington, Fort Montgomery and Mineville, N. Y.

### Effect of I. C. C. Ore Rate Decision

*EASTERN or station-to-station iron ore rates reduced 28 per cent and restored to level existing prior to Aug. 26, 1920, eliminating 40 per cent increase. New rates go into effect Aug. 28.*

*Ex-lake ore rates remain unchanged from those going into effect July 1, 1922, when 10 per cent reduction was made in accordance with general reduction rate decision.*

*Pending tariffs reducing rates on imported ore to level existing prior to Aug. 26, 1920, also go into effect Aug. 28. This will bring these particular rates on imported ore from Eastern tidewater to a parity of rates on imported ore already in effect, and import and Eastern ore rates will be on the same basis as they were before the 40 per cent increase was made operative.*

### History of the Proceedings

It will be recalled that in October, 1921, reductions of about 28 per cent were made in both the Eastern trunk-line and ex-lake ore rates, limited to expire Dec. 31, 1921. Prior to the latter date, the carriers applied to the commission for authority to extend on short notice the period for an additional three months. At that time, the commission was considering the question of general reductions in rates, and the authorization sought was denied. Early in March, 1922, the Eastern carriers filed the schedules, which were suspended, proposing a 28 per cent reduction in Eastern trunk-line ore rates. These were shortly followed by the suspended rates applying on ex-lake ore, now ordered canceled, which were modified so as to represent a reduction of only 20 per cent. Meanwhile there had gone into effect some of the reduced import ore rates, and carrying no date of limitation, they were not suspended.

The following table shows present rates and those

which go in effect on Aug. 28 on ore in cents per gross tons from Wharton, N. J.:

| To | Present | Effective Aug. 28 |
|---|---|---|
| Catasauqua | 154 | 111 |
| Coatesville | 196 | 141 |
| Lebanon | 210 | 151 |
| Steelton | 224 | 161.5 |

The following presents similar facts as to rates from Ringwood:

| To | Present | Effective Aug. 28 |
|---|---|---|
| Hokendauqua | 164 | 131 |
| Emaus | 201.5 | 161.5 |
| Hellertown | 201.5 | 161.5 |
| Reading | 201.5 | 161.5 |

The foregoing compares with the rate of $1.15 per gross ton on ore from Lake Erie ports to Pittsburgh, which it was sought to reduce to $1.02.

In taking up a discussion of the ex-lake ore rate case, the commission points out that on June 25, 1918, the ore rates from the mines to the upper lake ports were increased 36.5 cents, but no change was made at that time on the ex-lake ore rates. Under the general increases of 1920, the ex-lake, local, and import rates on ore were increased 40 per cent, but no further increase was made in the rates to the upper lake ports from the mines. The commission says there appears never to have been any fixed relationship between the upper and lower lake rates, and it is stated that the rates on coal and coke have become relatively higher than the rates on iron ore.

"While we are not prepared to find that there should be any definite or fixed relationship between rates on coal or coke on the one hand and the rates on iron ore on the other," the decision says, "it is evident that some consideration must be given to the maintenance of a relatively fair level of rates on the two commodities.

### Former Plan of Rate Making

"To preclude misapprehension, it should be stated that we do not here sanction by implication any reversion to the type of rate making known as the equalization of freight-assembly costs of raw material," the opinion says. The commission emphasizes in its finding that on each raw material the freight charge must be properly apportioned to the service performed. It says: "The proposal of the carriers to single out only one of the raw materials for the manufacture of pig iron and to leave unchanged the general level of rates on all other raw materials used for the same purpose does not contemplate the same unlawful charges involved in the assembly-cost method; but in other respects it is equally indefensible. To affirm, however, that the level of rates upon one important raw material may be violently reduced below the comparative level of the rates upon all other raw materials finds not the slightest sanction in our rejection of the assembly-cost idea.

In justifying its denial of reducing the ex-lake rates, the commission says that, roughly, the ex-lake rates since July 1, 1922, represent an index number of 155, considering the rates fixed by the iron ore decision of 1916 as representing 100. Rates on traffic in general, it is pointed out, were increased to a level representing an index of over 200, taking the rates of 1916 as 100, and since July 1, 1922, they still represent an index of over 180.

"If the reduced ex-lake ore rates become effective, they will represent an index of approximately 138," it is contended. "In the absence of some showing that the ex-lake rates on ore are relatively high compared with other rates on ore and with rates on traffic in general, further reduction therein at this time would appear to be out of harmony with our findings in Reduced Rates, 1922." Since 1916 and up to July 1, 1922, the decision says, there has been an aggregate increase of about 55 per cent in the ex-lake rates and of over 85 per cent in such of the Eastern and import rates as have not been subject to more than 10 per cent reduction since the inerease of 1920."

Speaking generally, the decision says, rates on Eastern trunk line and import ore, where such rates have not been reduced more than 10 per cent since the increase of 1920, are now much in excess of ex-lake ore rates for like distances, in many cases nearly double, and probably on the average more than 80 per cent higher.

The commission justifies the Eastern and import reduced rates and finds the proposed ex-lake rate reduction unreasonable and unlawful "for the reason that in relation to rates in general, and in relation to rates closely affiliated, such as on coal, they would tend to cast an undue burden upon other traffic; that they would be unduly prejudicial to ore traffic from mines in Eastern trunk-line territory, so far as the same carriers participate in the interstate carriage of both ex-lake and local mine ore traffic; that they are unlawful inasmuch as their establishment would jeopardize the rates on a large volume of other heavy-loading low-grade traffic which we have initiated under authority of section 15a of the interstate commerce act." Apprehension also was expressed lest it would adversely affect the annual return of 5.75 per cent fixed in the 10 per cent reduction case. The commission said it was persuaded the proposed reductions in ex-lake rates would not result in increased net revenues to the carriers, but in substantial reduction, "probably more than $3,000,000 per annum."

### Dissenting Views

In dissenting in part, and with Commissioner Aitchison concurring in his views, Commissioner Meyer gave figures as to earnings and made comparison with upper lake and other ore rates to justify the reduction proposed in ex-lake rates. He said the conclusion of the majority as to the probable reduced earnings not being based on car-loading statistics, does not specifically show the movement under the ex-lake rates.

"It cannot, therefore, on this record be concluded that an increase in tonnage following the reduction in rates would not result in increased rather than reduced revenues for the carriers," he says. "The opinion of practically all parties on record was to the effect that a reduction in rates would result in increased movement and increased revenues." At another point, he states that: "The incidences of rate reductions are necessarily more or less uncertain, but on no commodity does a reduction in rate give greater promise of a resulting reduction in the price of intermediate and final products than in the reduction of rates on iron ore; and to this extent the report of the majority is standing in the way of a reduction in the cost of living."

Commissioner Potter in his partial dissent gives figures to offset the contention of the majority that the proposed reduced ex-lake rates would be an undue burden on traffic and as to the finding that the proposed rates would imperil the returns to which the carriers are entitled, says the carriers do not think they would. The apprehension regarding further jeopardizing of the 5.75 per cent return is replied to with the statement that it does not justify the interference of the majority view, and that condemnation of reductions in rates should have a better foundation in certainty as to what the results would be. A reduction of the ex-lake rate 20 per cent, it is stated, would be approximately 25 cents per ton and aggregate approximately $9,000,000 per year, based on the 1920 movement. Such reduction, Commissioner Potter points out, would reduce the cost of pig iron approximately 50 cents per ton and correspondingly reduce the cost of iron and steel products.

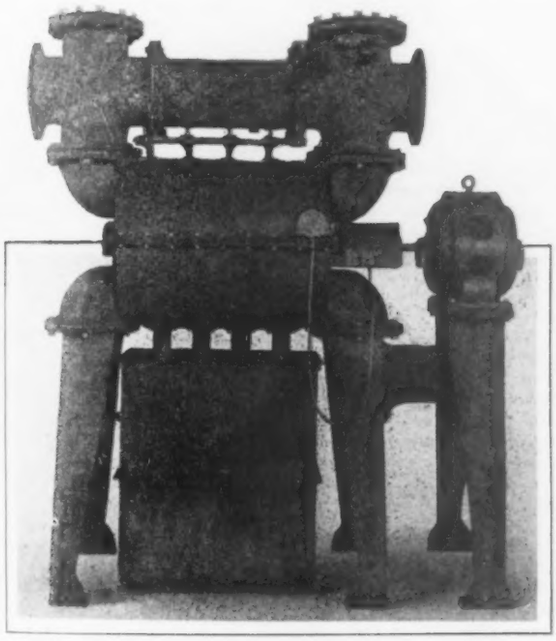
"The total 1920 movement of ore from mines in Eastern trunk-line territory was approximately 2,096,000 tons," he adds. "The protection afforded these ores by denying the proposed ex-lake reduction is 25 cents per ton, or an aggregate of $524,000 on the total movement. The protection of the Eastern mines to the extent of $524,000 is by the majority report made to cost the consumers of products of iron ore $9,000,000. To put it another way, in order to protect the Eastern ores to the extent of 25 cents per ton, the consumers of ore products are to be compelled to pay in excess of what they should more than $4 per ton on the ore produced by the local mines. I can see no justice in such action. We are not called upon to subsidize the East-

ern mines out of the funds of consumers generally of the products of iron ore. If the local mines are entitled to protection to the extent of 25 cents per ton, some means should be found which would not cost the consumers $4 per ton. It is to be noted, too, that the higher cost of pig iron continued by refusing the proposed reduction will naturally affect the cost to the consumer of products of import ore, so that the aggregate amount which the consuming public would pay on the basis of the majority report to protect the Eastern mines to the extent of $524,000 will be much in excess of $9,000,000. The interstate commerce act requires no such relation of ward and guardian between the local mines and this commission, as the majority report recognizes, at the expense of the producers of other iron ores and the consumers of their products."

## Tar Extractor with Improved Features

A centrifugal tar extractor for cleaning producer gas, which has, among other features, a water spray directed upon the walls instead of upon the fan blades, is being manufactured and marketed by the Gas Producer & Engineering Corporation, 115 Broad Street, New York, under the name of the Galusha tar extractor and gas pump. It is a multi-stage design.

The size shown in the accompanying illustration is driven by a 16-hp. motor at 1720 r.p.m. Under test it removed, it is stated, over 99.5 per cent of the tar with the gas flow at a rate of 50,000 cu. ft. per hour. The gas enters the extractor after passing through a cooler, which is a small cylindrical tank fitted with



Tar Extractor and Gas Pump. The water spray is directed upon the walls instead of upon the fan blades

water sprays, to chill the gas to approximately 100 to 140 deg. Fahr. The clean gas is delivered from the extractor under pressure, which may be distributed in an ordinary steel pipe in the same manner as natural gas and city gas and used in the same way.

The machine has a housing divided by transverse partitions into four or more sections, each provided with a rotor and a spraying nozzle. The nozzles direct the flow of water upon the walls of the casing instead of upon the fan blades, thus reducing the power consumption. A suitable drain carries off the wash water and tar at the bottom. Centrifugal force keeps the water distributed over the stationary interior walls. The clearance between the rotor and the housing brings the gas and the film of water over the casing in close contact. The drains lead into a tar collecting tank at bottom.

The gas enters opposite the center of the first fan and is forced outward toward the periphery against the water covered casing. It then passes around the first rotor through a central opening into next stage and the process is repeated for each stage.

Some of the distinctive features claimed for the Galusha extractor are: Small amount of power required; elimination of gas blowers, because the extractor also puts the gas under pressure; separation of the tar from the water in a very small space at the extractor, and small space required for the unit as a whole and the simplicity of the whole apparatus.

## Improved Pipe Wrench

A new pipe wrench known as the Little Giant and having the end-opening feature, as shown in the illustration, has been placed on the market by the Greenfield Tap & Die Corporation, Greenfield, Mass.

Simplicity, lightness and unusual strength are features claimed and the tool is designed to facilitate handling of pipe in corners and other confined places, the wrench being set on the pipe in the same manner as

Pipe Wrench with End Opening Feature

a pair of pliers, instead of having to fit the jaws on from the side.

The wrench is made up of only three parts, a drop-forged handle and jaw in one piece, heat treated; a drop-forged movable jaw, also heat treated, and a hardened steel nut. In this design springs, rivets, frame and pins have been eliminated. In a test of strength the 14 in. size is said to have withstood more than 4700 in. lb. without slipping or bending, the Army and Navy departments requiring but 2800 in. lb. for a wrench of this size. It is said to weigh less than a Stillson wrench of corresponding capacity.

A feature is the double set of teeth on the main jaw. The movable jaw can be engaged with either set of teeth which, it is pointed out, increases the life of that part. On the larger sizes four sets of teeth are provided, the movable jaw being reversible to engage the additional sets of teeth, which are below the adjusting nut.

The wrench will be made in 8, 10, 14, 18 and 24 in. sizes, the three smaller sizes being now available.

## Cars and Locomotives at Low Prices

Low-priced steel has been no small factor in bringing large steel car orders to the books of the car works in the past six months. The *Railway Age* says of the exceptional prices named on cars and locomotives:

"The car and locomotive market has been greatly assisted by lower prices. Steel underframe box cars have been secured in recent months at prices approximating $1,500 or $1,600, steel hopper and gondola cars at from $1,600 to $1,800, the price varying, of course, with the size and design. Refrigerator cars cost at present about $2,700. Typical locomotive prices are $40,000 for a Pacific and from $37,000 to $42,000 for a Mikado. Six-wheel switchers have been bought at about $30,000 to $33,000. Passenger coaches have been secured at about $20,000. These prices represent marked decreases from the high prices which ruled in 1920 and are apparently proving a real attraction in so far as concerns bringing out orders. Considering the situation as a whole, other than the fact that we should normally expect a decline in business in the summer months, there is nothing at present in sight to lead one to believe that the equipment business will do else than continue in good volume."

# RAILROAD STEEL CASTINGS

## Testing Society's Tentative Specifications Just Adopted for Carbon Steel

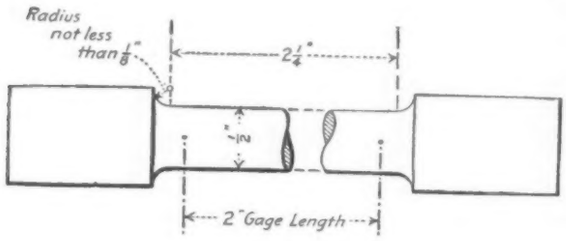
**Among the new tentative specifications adopted by the American Society for Testing Materials, at its annual convention at Atlantic City, N. J., June 26th to 29th, those for railroad steel castings were prominent. They are the result of an extensive investigation and are reproduced as follows:**

1. (*a*) These specifications cover all carbon-steel castings for locomotive and car equipment, and for miscellaneous use, classified as Grade A and Grade B.

(*b*) The purposes for which the two grades are generally used are:

*Grade A*, unannealed, covers only such special castings as may be approved by the purchaser. *Grade A*, annealed, covers such castings not covered by Grade A, unannealed.

*Grade B* covers all castings for high stresses such as truck side frames, bolsters, couplers and coupler parts, locomotive frames and locomotive driving and trailer wheel centers.




*Note:—The Gage Length, Parallel Portions and Fillets shall be as Shown, but the Ends may be of any Form which will Fit the Holders of the Testing Machine.*

2. Grade A castings shall be furnished annealed unless otherwise specified by the purchaser.

Grade B castings shall be furnished annealed.

### Manufacture

3. The steel may be made by one or more of the following processes: open-hearth, electric furnace, crucible or side blow converter.

4. (*a*) The castings shall be allowed to become cool. They shall then be uniformly heated to the proper temperature to refine the grain, and allowed to cool uniformly.

(*b*) For the purpose of determining the quality of annealing of all castings weighing 150 lb. or over, and of such lighter castings as shall be required by the purchaser or his representative, there shall be provided for removal by the inspector after annealing and also after reannealing, if necessary, at least one and not more than two annealing lugs. The location of the annealing lugs shall be such that when removed by the inspector they shall be indicative of the character of annealing. The standard annealing lug shall be 1 in. in height and 1 in. in width and ⅝ in. in thickness where it joins the casting.

(*c*) If, in the opinion of the inspector, a casting is not properly annealed, he may at his option require the casting to be re-annealed.

### Chemical Properties and Tests

5. The steel shall conform to the following requirements as to chemical composition:

| | Grade A | Grade B |
|---|---|---|
| Manganese, per cent, not over..... | 0.85 | 0.85 |
| Phosphorus, per cent, not over..... | 0.05 | 0.05 |
| Sulphur, per cent, not over..... | 0.05 | 0.05 |

6. An analysis of each melt of steel shall be made by the manufacturer to determine the percentages of carbon, manganese, phosphorus, sulphur and silicon. This analysis shall be made from drillings taken at least ¼ in. beneath the surface of a test ingot obtained during the pouring of the melt. The chemical composition thus determined shall be reported to the purchaser or his representative, when requested, and shall conform to the requirements specified in Section 5.

7. An analysis may be made by the purchaser from the broken tension test specimen or from a casting representing each melt. The chemical composition thus determined shall conform to the requirements specified in Section 5. Drillings for analysis shall be taken not less than ¼ in. beneath the surface, and shall be taken in such a manner as not to impair the usefulness of a casting.

### Physical Properties and Tests

8. (*a*) The steel shall conform to the following minimum requirements as to tensile properties:

| | Grade A Unannealed | Grade A Annealed | Grade B Annealed |
|---|---|---|---|
| Yield point, lb. per sq. in..... | 29,250 | 29,250 | 26,000 |
| Elongation in 2 in., per cent.. | 1,450,000 | 1,600,000 | 1,600,000 |
| | Tens. str. | Tens. str. | Tens. str. |
| Elongation, per cent, not under | 22 | 24 | 22 |
| Reduction of area, per cent... | 2,250,000 | 2,600,000 | 2,500,000 |
| | Tens. str. | Tens. str. | Tens. str. |
| Reduction of area, per cent, not under ..... | 30 | 35 | 30 |

(*b*) The tensile strength shall be reported as information.

(*c*) The yield point shall be determined by the drop of the beam or by the dividers, the method being optional with the inspector, and at a cross-head speed not to exceed ½ in. per minute. The tensile strength shall be determined at a speed not to exceed 1½ in. per minute.

9. (*a*) A sufficient number of test coupons, from which the required test specimen may be prepared, shall be cast attached in the neighborhood of each end of each locomotive frame, attached to each locomotive cylinder, to each wheel center, and to miscellaneous castings weighing over 150 lb. These test coupons shall remain attached to the castings throughout the annealing and until the castings are presented for inspection. If the design of the casting is such that the test coupons cannot be attached, they shall be cast in runners outside of the casting, but attached to it, to represent each melt. The location of the test coupons, as well as the method of casting such coupons, shall be subject to mutual agreement between the inspector and the manufacturer. In the case of any orders for castings weighing under 150 lb., the physical properties as required in Section 8 may be determined from an extra or spare test bar cast with and attached to some other casting from the same melt.

(*b*) When sufficient coupons have not been cast, a test specimen may be cut from a finished casting at a location mutually agreed upon by the inspector and the manufacturer.

(*c*) Tension test specimens shall conform to dimensions shown in Fig. 1. The ends shall be not less than ⅞ in. in diameter and of a length and form to fit the holders of the testing machine in such a way that the load shall be axial.

10. (*a*) One tension test shall be made from the neighborhood of each end of each locomotive frame and both tests shall meet the requirements of the specifications. One tension test may be made from each wheel center and each locomotive cylinder casting, but of such castings at least one of each kind in each melt shall be tested. For miscellaneous castings from melts which do not include frames, wheel centers or cylinders, one tension test shall be made from each melt, except as provided in Section 11 (*a*).

(*b*) If the test specimen shows defective machining or develops flaws, it may be discarded and another specimen substituted.

(*c*) If the percentage of elongation of any tension test specimen is less than that specified in Section 8 and any part of the fracture is more than ¾ in. from the center of the gage length, as indicated by scribe scratches marked on the specimen before testing, a retest shall be allowed.

(*d*) No part of these specifications shall operate to cause any one tension test to apply to more than 40 tons of casting as offered for inspection.

11. (*a*) After 15 consecutive melts, which may contain any or all classes of castings (except frames, wheel centers and cylinders) covered by these specifications on one or more orders have been tested and accepted in accordance with the above requirements, the manufacturer may group the succeeding melts in lots of five melts each, but each lot not to exceed 40 tons, the entire group to be accepted if the test specimen selected from the lot fulfills the chemical and physical requirements herein specified. If this test fails, a rehearing will be granted on the melt that the failed bar represents, and the other four melts of the group shall be tested individually.

(*b*) If there is a period of more than six months between shipments of the class of castings covered by these specifications, then each melt shall be tested individually until 15 consecutive melts have been accepted, after which the melts may again be grouped as in Paragraph (*a*).

(*c*) If one or more melts are rejected, each succeeding melt shall be tested individually until 15 consecutive melts have been accepted, after which melts may again be grouped as in Paragraph (*a*).

12. If the results of the physical test lot do not conform to the requirements specified, the manufacturer may re-anneal such lot not more than twice and retest shall be as specified in Section 8.

(*Continued on page* 321)

# Value of Accident Investigations

## Need of Studying Each Case in a Methodical Way, Thus to Prevent Recurrence—Meeting the Variable Human Factor

BY H. P. HEYNE*

LIKE any other work, accident prevention activities should be conducted in a systematic manner if they are to be successful, both from the humanitarian and economic viewpoint. Too much stress cannot be laid in the section of safety engineering which deals with accident investigations, as corrective measures or methods are the outcome of the results of the investigations if conducted in a thorough and impartial manner.

### Need of Ascertaining Causes

Each accident involving loss time should be thoroughly looked into, together with injuries where no time was lost but which might have been serious. The idea of an investigation is that one accident will prevent another by removing the cause, which eliminates the effect.

Each injury, whether trivial or one causing loss of time, is reported to our emergency hospital, by having the foremen render their reports. A foreman may state on his report that the "man had first finger of right hand lacerated by having finger caught between slabs." It may be true that the injury occurred in this manner, but we aim to get after the "why and how" of the injury, and also what should be done to prevent a recurrence. Without a thorough investigation, in a case similar to the aforementioned, one would not know whether the slabs were improperly piled; handled in an unsafe manner by crane operator; fellow workman pushing slabs over with the one on which the man was working; slab may have toppled over, and a host of other questions may present themselves, and still one would not know the real cause, such as the predisposing, contributing and immediate causes for the injury.

### Procedure in Studying Accidents

In cases of lost time injuries, we visit the scene of the accident together with the department superintendent and foremen and members of the safety committee in the department, and make a thorough survey of all surrounding and existing conditions, such as the machinery or equipment, method of performing the work, and material employed in the work, in order to get the scene firmly impressed.

Witnesses are interviewed and must make true statements, and not conceal any facts, so that one may get to the root of the trouble. Each witness to the accident is personally interviewed.

After the statements have been secured, a meeting of the investigating committee is called, which is composed of the department superintendent and foremen of the division where the injury occurred, also members of the safety committee. The information as furnished by each witness is gone over in a thorough manner and discussed, also a discussion by the committee of our previous visit to the scene of the accident, whereupon the committee renders an "investigation report" which is signed by the members of the committee. The report brings out the results of the investigation as to what or who was at fault for the accident, also as to what must be followed in the future to prevent a recurrence.

A copy of the witnesses' statements and the committee's report is forwarded to the general manager, general superintendent and department superintendent and a copy is retained in the permanent files of the safety department.

It will be observed that by having a full and complete record of accidents the papers serve their purpose. All department heads may become familiar with the cases which might bring up matters in other departments to be corrected, or result in closer observance over the men, with instructions that they pay particular attention to certain matters or conditions.

The papers may be brought into use when conducting departmental meetings among the working men, for they will eagerly absorb the information which causes them to think, talk and act safely, because the instances are driven home.

The time consumed in drawing up statements in a business-like form;—attacking the accident from different angles,—is well spent, in that each case is recorded in a detailed manner so that future reference may be made to each case. Also there is the psychological effect the investigations have upon the men, which in due time results in a reduction of injuries and finally the economic saving to the employer.

### Disciplining of Employees

When an employee is injured through ignorance or lack of forethought on his part or that of a fellow working man, it is well to consider whether the best interests of the company demand his dismissal or lay off, for the employee has to be replaced by a less experienced man, which does not help matters any, and increases the accident exposure and the cost of labor turnover, which is reflected in decreased efficiency of the new worker.

It may prove more effective to demote the employee at fault and to insure that he and others may know why such action was taken, which fact would tend to make the men think before they act.

Our records show that 57.4 per cent of the injuries occurred to employees who were in our service for periods less than six months. Dismissal of an employee may be necessary in cases where a shop rule or instruction was violated or for wilful negligence or intent, which caused the accident, but an impartial hearing should be given the employee before final dismissal.

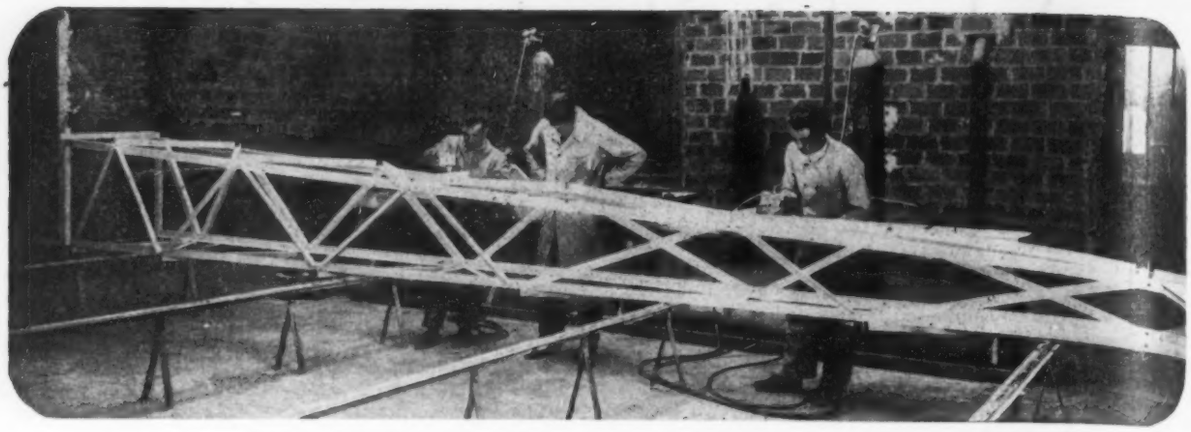
Safety engineering involves the human element, and might be termed the study of human nature, for no two persons are alike, and problems are presented each day which differ from the preceding cases of similar nature. It is a branch of work in an establishment which must be conducted along scientific lines in order to get results.

*Safety inspector, United Alloy Steel Corporation, Canton, Ohio.

## German Process for Soldering Aluminum

WASHINGTON, Aug. 1.—Attempts are being made by the German inventor of what is said to be a new process of soldering aluminum to sell the American rights for $5,000 and the rights for all countries for $30,000. Carl Barthels, Heidelberg, has been commissioned, according to a report received by the Department of Commerce from Consul Moorhead, Stuttgart, Germany, by the inventor to sell the rights to the patent. It is stated that the solder has been tried by German manufacturers and that it has proved satisfactory. It is claimed that the process simplifies the soldering of aluminum both pure and in connection with other metals, such as tin, zinc, copper, etc. The so-called advantages are declared to be simple application with the soldering iron, without any liquid soldering agent, firm union of the edges soldered and permanency, no matter how much the soldered seam may be exposed to pressure, bending and pulling.

**At Charleroi, Pa., the Electric Alloy Steel Co. is operating its property on a basis close to usual production.**



# Protective Coatings of Sprayed Metal*

## Late Developments With the Schoop Process Abroad—Examples of Applications and Operating Features —Spraying Pistol Operated Electrically

BY ROBERT G. SKERRETT

SPRAYING molten metals to form a protective coating was looked upon a decade back as little better than a laboratory achievement of trifling practical value. To-day, thanks to the persistence of M. U. Schoop of Zürich, Switzerland, apparatus and methods have been devised that make metal spraying for this purpose of wide commercial usefulness. The latest reports of every-day performances reveal how effectually the inventor has surmounted the techinal obstacles which beset his path; and his longest strides forward have been achieved in the last five years. To-day, in Europe, Schoop metal-spraying equipments are employed extensively in depositing coats or films of zinc, lead, aluminum, copper, tin, etc.

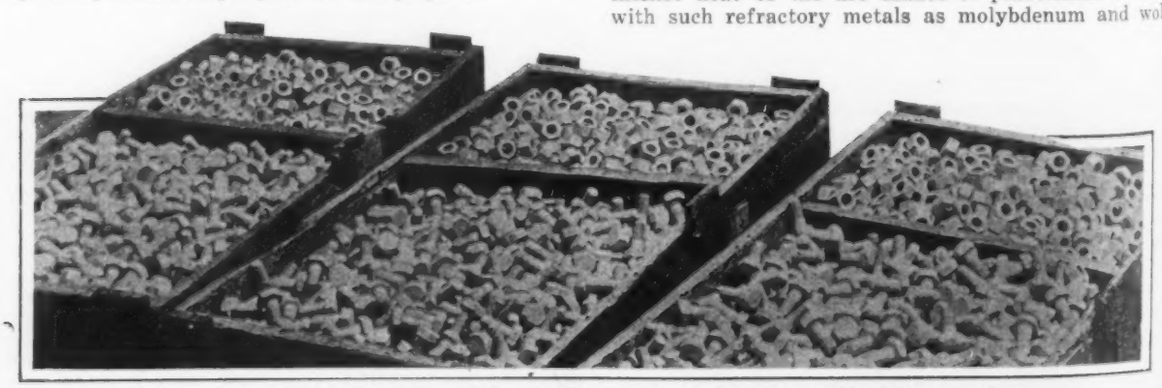
Broadly stated, his different processes depend upon the generation of sufficient heat to melt wires or powdered metal and then to project the molten particles forcibly by a blast of compressed air. The velocity of the atomized metals suffices to cause them to adhere, by reason of their impact, to the receiving surface and also to insure their uniform distribution. Whether the metal is used in the form of a wire or a powder depends upon the nature of the metal, its price and the service for which it is intended. For instance, abroad, powdered zinc is obtainable in abundant quantities as an industrial by-product, and is therefore much cheaper than zinc wire. A so-called pistol is the medium by which the metal is made molten or plastic and projected against the body or surface which is to be coated.

The powder-spraying pistol has much to commend it, and by reason of its simplicity of construction it has won approval among industrial users, inasmuch as little training is required to qualify a workman to manipulate it satisfactorily. The powdered material is fused by a gas flame. The pistol is equipped with a magazine or small container charged with the metallic dust or powder, and this material is forced out of the reservoir by compressed air and carried by the air stream through the melting flame. The air pressure is regulated so that its impulse will be strong enough to drive the incandescent particles against their target. This manual type of apparatus has no movable parts, such as are essential to feeding the wire in the pistols designed to handle metal in that form, and is largely employed for zinc or tin coating.

Quantity galvanizing and tinning of small articles is done by means of the powder-spraying pistol associated with another mechanical feature. The products to be treated are loaded into a revolving drum, equipped with a series of spiral ribs, which continually turn the contents and bring every surface of each piece into the path of the atomized metal. The pistol is mounted upon an oscillating shaft, and the motion of the latter serves to distribute the spray and to insure the complete coating of the manifold tumbling bodies. Of course the wire-spraying pistol can be adapted to this machine.

The electro-pistol is a late evolution of the Schoop metal-spraying processes. Instead of a gas burner, an electric arc is relied upon to do the melting, and the intense heat of the arc makes it practicable to deal with such refractory metals as molybdenum and wol-

*This article, based on European information, does not refer to developments of the Schoop process in the United States under the control of the Metals Coating Co. of America, 495 North Third Street, Philadelphia, which has issued a profusely illustrated pamphlet for this purpose.



Bolts and Nuts Which Have Been Galvanized in Quantity by the Schoop Metal Spraying Process

fram, in addition to the metals already mentioned. The adoption of the arc, however, imposed important modifications in the apparatus. As is well known, electro-thermic heating, especially when using the lighting arc as a source of heat, permits the generation of the highest-known temperatures within any desired limited area. But the usual electro-thermic melting cycle cannot be applied to the fusing of metals for spraying, because of the difficulties of maintaining a uniform flow of the metal and the impossibility of preventing the clogging of the channel through which the necessarily fine stream would have to be fed to the blast of compressed air.

This problem has been met as follows: Instead of a miniature furnace, Schoop has substituted a self-melting arc which is induced between two terminals formed of the wire to be sprayed. These wires are kept at an arcing distance from each other, and as they are fused, and then atomized by the blast of compressed air, compensation is effected through the agency of an air-driven mechanism. In earlier forms of the pistol a pneumatic turbine making 27,000 r.p.m. was relied upon to feed the wires, but a simple Pelton wheel has now been adopted which runs at a velocity of from 4000 to 5000 r.p.m. By means of suitable gearing, the speed is reduced so that the advance of the opposing electrodes is just fast enough to offset their consumption. The heat generated at the arc is prevented from spreading into the mass of the pistol by the cooling action of the discharged compressed air.

The electro-pistol is operated by current of from 20 to 30 volts, at from 40 to 70 amperes; and spraying the metal calls for an expenditure of about 18 cu. ft. of compressed air per minute at a pressure of 50 lb. per sq. in. In earlier models of the Schoop pistols, air at a pressure of 100 lb. was employed. By reducing the pressure to 50 lb. there is a distinct technical gain, inasmuch as there is less chilling of the atomized particles; and this promotes adherence and a more intimate union with the texture of the supporting mass. Each wire is advanced at the rate of from 5 to 13 ft. per min., depending upon the nature and the size of the wire.

The quantity of metal that can be deposited in the course of an hour depends, of course, upon the kind of metal handled. The results may be broadly stated as follows:

Zinc, sprayed at the rate of 6½ lb. per hr., will cover a superficial area of 65 sq. ft. to a thickness of 0.0002 in.
Tin, sprayed at the rate of 13 lb. per hr., will cover a superficial area of 43 sq. ft. to a thickness of 0.0008 in.
Lead, sprayed at the rate of 22 lb. per hr., will cover a superficial area of from 20 to 30 sq. ft. to a thickness of 0.002 in.
Aluminum, sprayed at the rate of 1 lb. per hr., will cover a superficial area of from 30 to 40 sq. ft. to a thickness of 0.0012 in.

In the case of multiple galvanizing, by the machine already described, it is entirely practicable to coat a charge of 650 lb. of bolts and nuts, for instance, within an interval of 20 min.

The principal use of the metal-spraying process is for galvanizing, and its employment in this field will be the most conspicuous of its applications for some time to come. About three years ago the Swiss federal railroads introduced this system of galvanizing, and have thus coated the transmission towers, etc., of the electrified St. Gothard line. Both the German and the Swiss railroads have so protected the frames of their cars—especially coal cars exposed to the corrosive action of sulphur washed out of the fuel by rain or melting snow.

Latterly, the French have galvanized the transmission towers of the Midi road; and these towers were zinked in this way without any interruption to traffic. A number of bridges have been galvanized in this manner by recourse to portable outfits; and the parts of these structures directly in the path of the smokestack exhaust of steam locomotives have been further shielded from erosion by a supplemental film of lead deposited by the same apparatus. In the climate of Switzerland the sprayed-on metal will last anywhere from 18 to 20 years. In Italy, two coats of paint are being saved by metallizing wood with zinc and afterwards covering the deposit with a coat of paint.

During the world war, the Germans made a practice of spraying aluminum upon the grate bars of their locomotives, and they found that the protecting film measurably reduced wear and tear. The aluminum seems to screen the bars from the action of the furnace gases, and incidentally prevents scaling of the iron and the adherence of slag.

It is not possible within the limits of the present article to more than hint at the many ways in which Schoop metal-spraying pistols are being utilized. In Switzerland alone no fewer than 250 establishments are licensed and equipped to operate these tools, and with them the shops are coating a wide range of products. For example, iron containers for chemical plants are coated with aluminum, lead, or copper; iron calenders for textile works are sprayed with brass; centrifugals used in the manufacture of guncotton are protected with aluminum; porcelain insulators are surfaced with copper; Pelton wheels are thus overlaid with lead to arrest the erosive action of sand and pebbles; and paper and fabrics are extensively metallized for all sorts of purposes. Telephone cables, etc., instead of being wrapped first with paper and then with zinc foil, are now insulated with a single wrapping of zinc-coated paper. No mention has been made of the purely decorative or art fields in which the Schoop metal-spraying pistols can be employed.

## Colorado Steel Works Operations

President J. F. Welborn of the Colorado Fuel & Iron Co. makes this statement concerning the company's business in the July 15 issue of its *Industrial Bulletin:*

"Operations at the steel works and coal mines during the last three months have been at a fairly satisfactory rate for that time of the year, yet the volume of business done at the low prices made necessary by keen competition has not been sufficient to pay all direct charges and take care of depreciation. Operations for the quarter ending March 31 returned a loss of $431,-268.53. Statements of earnings for the first two quarters of the year are published elsewhere. An analysis of these statements shows that after paying wages of employees the receipts from business done during the first six months of this year were barely sufficient to meet the other necessary charges for conducting the business, such as freight on raw materials, cost of supplies, interest on borrowed money and taxes, leaving less than half the amount necessary to take care of depreciation for the period. Obviously, in this half year the stockholders received nothing from their investment in the business.

"Business in the coal department promises well for the next few months, although the demand is not abnormal and there has been no enlargement of the territory in which our coals are marketed as a result of the strike elsewhere.

"Orders for wire, nails, merchant bars and other products of the small mills are at a rate slightly less than our capacity. The prospects are that this business will not decrease in volume during the next few months, and it may increase.

"We have made no sale of heavy rails in recent months, and our rail orders will be completed in the near future when in all probability the rail mill will have to close down for a period. This will, of course, necessitate some curtailment in production of coke, pig iron and ingots, and reduce coal shipments to the steel plant."

## Changes in Cost of Living

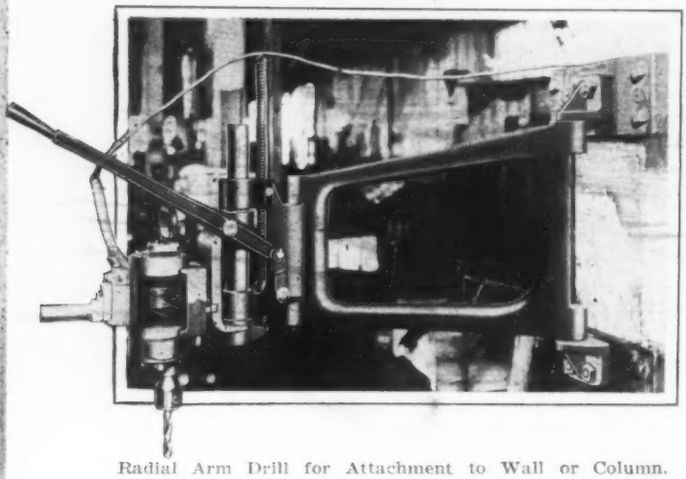
Changes in the cost of living for June, as determined by the U. S. Department of Labor through the Bureau of Labor Statistics, show that the cost of living was 66.6 per cent higher than in December, 1913, 23 per cent lower than in June, 1920, and two-tenths of one per cent lower than in March, 1922.

Furniture continues to be the highest item in the cost of living, standing 102.9 per cent higher than in 1913. Food, the largest item in the family budget, is 41 per cent above 1913; rents are 60.9 per cent "up" and clothing 72.3 per cent.

## Millwrights' Radial Arm Drill

A radial arm drill of the type illustrated, intended especially for use in connection with the work of millwrights and maintenance men, has been placed on the market by the Van Dorn Electric Tool Co., Cleveland. It is attached to the wall or column and the arm and drill cover a radius of 31½ in. from center to wall pivots. The auxiliary forearm permits a secondary radius of 10½ in., to be swung for locating the drill.

The electric drill proper is incased in an aluminum housing and arranged for quick disassembly for greasing and cleaning. It is well balanced, convenient to handle in almost any position, and the light weight of the machine as a whole permits easy moving to various locations in the shop. The motor is of the universal type for either alternating or direct current and is ventilated by an aluminum fan on the rotor shaft. The drill chuck provided permits the use of drills up to ⅝ in. diameter for work of iron or steel; larger wood bits may be used.



Radial Arm Drill for Attachment to Wall or Column. The radius covered, from center of drill to wall pivots, is 31½ in. Drills up to ⅝ in. in steel may be used

In the radial arm the weight is distributed to give the strength and rigidity necessary to withstand heavy duty and the design permits of an easy swinging motion of the arm for quick location of the drill. The arm is supported by the pivoted brackets, as shown. At the opposite end of the main arm casting there is a second pivoted joint on which the short forearm swings and the outer bearings of the forearm form a support and guide for the drill bracket. The forearm is intended to give flexibility to permit quick and accurate location of the drill.

The drill bracket or sliding member is raised and lowered by means of a long lever and toggle-link mechanism. A secondary drill-lifting arrangement is also provided in the form of a strong tension spring attached to the lower part of the drill bracket and hung from an extension rod above the forearm. The drill is attached to the radial arm by unscrewing one handle and bolting the drill to the adaptor plate on the radial arm. Less than a minute is said to be required to attach or detach the drill.

## Large Orders for Springfield Plants

SPRINGFIELD, OHIO, July 31.—The Armstrong Brothers' Mfg. Co. is turning out from 1000 to 1200 castings for incubator heaters each week. It has an order for 50,000 heaters from the Buckeye Incubator Co., which has many domestic and foreign orders. Archibald Bell of Harbley, France, European representative of the latter company, who has been here for two weeks, left a large order with the incubator company.

A survey made by the Chamber of Commerce shows that out of 18,000 employees used in the local plants normally, 74 per cent are working 5½ days per week and the rest three days a week. Manufacturers say the coal supply here will last from 60 to 90 days and that rail shipments outbound are good. Inbound shipments of supplies are not coming so well. The delay is partly due, it is stated, to a rush of orders at the supply plants.

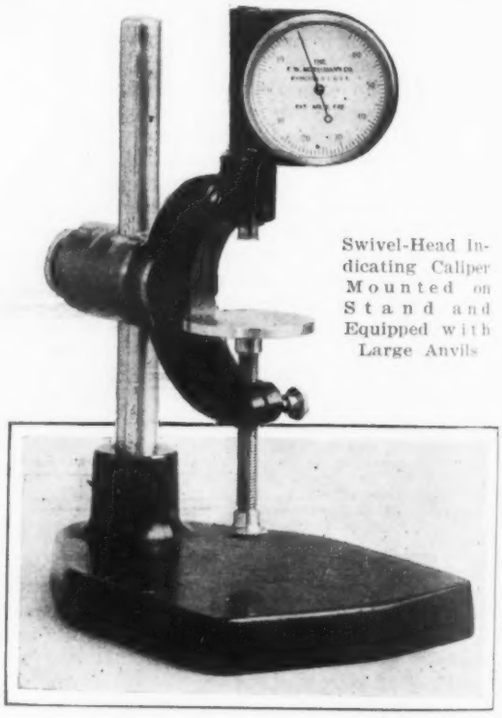
As a result of an order for 25 locomotives placed by the New York Central Railroad with the Lima Locomotive Works, the plants of Ohio Steel Foundry Co., this city and Lima, are working good sized forces of men, according to announcement of Works Manager T. H. Harvey.

## Swivel Head Indicating Caliper

An indicating caliper the head of which swings a full circle about the plunger, permitting of easy reading of the dial from any position, has been brought out by the F. W. Horstmann Co., Irvington, N. J.

The head will stay fixed in any position and without the use of clamps. The instrument is set to a sample in the same manner as in the company's regular type, the sample or gage being set with the hand on the zero mark and the back stop arranged so that the work is centrally located on the contact points. The dial is graduated in thousandths of an inch. Six sizes, from 1 to 6 in. capacity, are available and each size has a range of 1 in.

A stand can be provided in which the tool can be clamped in either a straight or tilted position, and held perfectly rigid and although heavy enough for the usual work the stand is provided with two holes in the base for fastening to a bench or table. The instrument can be equipped with larger anvils for use with the caliper and stand combination.



Swivel-Head Indicating Caliper Mounted on Stand and Equipped with Large Anvils

## Mixed Coal and Coke for Water Gas

Results obtained by W. J. Dunkley, gas engineer of the Bureau of Mines, in the course of experiments made at Ottwa, Ill., in the use of mixed coal and coke fuel for water gas manufacture, show that capacities up to 97 per cent of the rated capacity with good coke fuel can be obtained, using 70 per cent Illinois coal and 30 per cent coke from Kentucky coal, with 6 ft. gas sets operating up to 10 hr. per day. The generator fuel consumption was about 33.5 lb. of mixed fuel per 1000 cu. ft. of gas made.

Experiments on the treatment of lignite, raw and carbonized, by the Trent process, are being made in North Dakota by W. W. Odell, fuel engineer of the United States Bureau of Mines. Construction of a vertical lignite carbonizing oven has been completed.

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ESTABLISHED 1855

# THE IRON AGE

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## Shall Autocracy Succeed?

The air has been full of strike settlement talk in the past week. In the coal strike the miners' leader has said confidently that a national conference between operators and union miners was near at hand, but there has been little to corroborate this view or to indicate early resumption of work by the strikers. In the railroad strike, from many directions have come the prediction of an early return of the shopmen to their work under a settlement made at the President's instance and involving concessions by both sides.

For more than a week Government and unofficial comment has pointed to the seniority question as the only real bar to the calling off of the railroad strike. In fact, a plan was said to have been proposed by the President under which the railroad employees who stayed at work would have preferential treatment, while next would come the returning strikers, and last the men who had taken the strikers' places. The urging of various editorial writers in the daily press that with a compromise in sight on all but seniority in service, that issue must not be allowed to prevent a settlement has plainly implied that the railroad executives should recede from their stand on this question. With entire justice the president of the New York Central has replied, "It is the solemn duty of the roads to be loyal to the men who were loyal to them." And another railroad president has said: "It is not an academic question. We have given our word of honor to the new men, guaranteeing their seniority over old men coming back." Still others have pointed out that they were triply bound to protect their new employees —first, morally; second, by written contract, and third, by the decision of the Railroad Labor Board to rank new men immediately after old men who remained loyal.

At this writing conferences are still on, and it is not known to what extent the men who came to the help of the railroads and of the whole people are to be sacrificed to the demands of those who set at nought the decisions of the Government, expressed through the Railroad Labor Board. As the President wrote to J. Cleve Dean, and in so writing sent an unequivocal message to the Lewises, the Jewells and all the incendiary leaders of organized labor who have expressed contempt for the Administration in this most grave crisis, "there can be no Government unless its mandates are accepted by the citizenship of the Republic." Yet in the proposed settlement the country is called on to see a practical reversal of the finding of this same Railroad Labor Board on the status of the men who tried to stop the wheels of transportation and bring industry to a standstill. It is true that the compromise proposal, in sending certain demands of the strikers back to the labor board for rehearing, compels the union to recognize the authority of that body, but that recognition should be demanded as of right and not bought by a sacrifice of principle.

The most serious thing about the double strike situation is not that transportation may be crippled—though, in fact, leading railroads are in a fair way to defeat the strikers completely; nor even that the country may be in the grip of a fuel famine in the coming winter. What is of the gravest concern is that a law-defying labor autocracy is in a fair way to succeed in its coercion of the "loyal and law-abiding citizenship," that overwhelming majority of the American people to whom the President has made his appeal in this critical time.

Without adopting the language John L. Lewis applied to the non-union workers at Herrin, Ill., when he advised that they be "treated like ordinary strikebreakers," the Administration's seniority proposal practically puts the men who have saved the railroad situation in the past month in that very category.

Apparently the country took too much satisfaction from the repeated defeats of union autocracy in 1919. First a courageous Governor made it plain at Boston that there was no room in a democracy for labor union imperialism; and later in the same year, when the coal miners tried to impose their will on the whole people, they got the same answer. Last of all came the railroad brotherhoods, with their threat to strike against the Government; but after sounding out the popular temper they wisely decided not to make war on the American people.

Three years have passed, with industry depressed for more than half the period, and many

adjustments have come both in wages and in commodities in response to a widespread demand for relief from the heavy burdens of war-time prices. Yet here are two classes of workers that have defied the Government and with lawless disregard of the rights of others have set out to force the Government to accept their will. Why should the American people, who in 1919 were able so decisively to check union autocracy, be forced now to compromise on an issue involving the ability of the Government to compel respect for its findings? What can come from such a compromise but encouragement to law-breakers and more power to superior force as the labor court of last resort?

## Steel in Dwelling Houses

In recent months there has been remarkably great activity in the erection of dwelling houses, and it is to be regretted that conditions were not ripe for this unusual opportunity to be embraced for the introduction of steel in the framing of these buildings. From all angles this substitution, long predicted and certain to occur some time, would be advantageous. The steel industry would be glad to have this additional outlet for its steel. The owner of the building would be much better satisfied, since he would have a more durable building. The occupant would feel safer and be more comfortable. The general public would be advantaged in fire losses being reduced in the long run and insurance rates coming down in consequence.

Without entering into details, it may be remarked that steel sections to replace wood joists and studding and wood or brick outside walls have reached a point, so far as the section is concerned, where there is much to commend them. It is recognized that perfection has not been attained in distribution of metal to give the greatest stiffness for a given weight; but considering the whole problem of the substitution of steel for wood much more progress has been made in this part of the problem than in its other parts.

From the practical viewpoint, the greatest barrier to the general use of steel in this connection in place of wood is the training and habits of those who are engaged to build houses. The carpenter has his plans and dimensions; but in practice he does most of his cutting of wood, not to fit the plan but to fit such parts of the building as he has already managed to construct. This he cannot do with steel. The carpenter has practically no initiative even when working with wood. Although houses have been framed for generations, practice has not been standardized, and if carpenters have not arrived at a common, and best, method of performing simple operations in wood it is plain that the substitution of an entirely different material is a serious matter.

Apart from the personality of the individual workman, there is the great difficulty of the building trades being what is called "organized," which means, among other things, "jurisdictional disputes," which arise now from the most trivial causes. A given form of roofing, for instance, requires a different craft according to the angle. One craft lays it on the roof, another lays it when it goes on the vertical side wall.

It is hard enough for the individual owner to get his house built when he strives to follow the beaten path. He is unlikely to attempt something altogether new. The hope of steel must lie in the investment builder, the capitalist who builds large numbers of houses as a business. An entirely new machine for building houses will have to be created. There is no chance simply to make a substitution of the one material for the other. One can substitute wall board for plaster, or metal lath for wood lath, or steel conduit for loom, without a great deal of difficulty, but substituting steel framing for wood framing is fundamental. It is not a mere matter of the steel industry offering the product. In essence a whole consuming industry will have to be built up.

## Buying Power the Test

Efforts to prognosticate the course of industry may usually be aided by comparing the expectations of the past with what has developed, so as to observe the tendency to error. It is helpful, therefore, to compare the condition of the export steel market now existing with the predictions that were being made during the war. It was the common prediction that after the war the demand for steel would be world-wide and of unprecedented proportions. The world would have grown very short of steel, would have accumulated new "needs" and would be "hungry" for steel. In some quarters, however, fears were expressed that the American manufacturers might be at a disadvantage in export trade on account of high costs.

The record of three and a half years of post-war steel demand is now available. In 1919 and 1920 iron and steel exports of the United States were greater than in the two years before the war, by approximately one-half, while exports in 1921 were 23 per cent less than in 1912-13, and this year they have been running at about the 1921 average.

British exports of all iron and steel products have been as follows: First half 1921, 879,130 tons; second half, 856,436 tons; first half 1922, 1,625,635 tons. Deducting, for the first half of this year, exports of scrap, pig iron, castings, etc., there is left about 1,200,000 tons of regular steel mill products. Our own production of finished rolled steel in the first half of this year was about 12,000,000 tons, representing about 60 per cent of the productive capacity.

If, therefore, the American steel industry had had all the export steel business in the first half of this year that fell to the British producers, the result would have been a 66 per cent operation instead of a 60 per cent operation. Our beating the British would have helped very little to engage our increased capacity.

The error made during the war—an error frequently made—was that of taking it for granted that imagined "needs" will be satisfied. Buying power is the real factor. If buying power is lacking needs that are very pressing will not be satisfied. If there is buying power and no pressing needs, needs that are not pressing will be satisfied. If

there are no needs at all the money in all probability will be spent anyhow.

It is the same with the consumers of the United States as with consumers in other countries. For trade to be active, buyers must be able to buy. They will always discover needs or wishes if they have the buying power. As a rule it is not a favorable symptom for a class of people to appear to be in great need of material or equipment. Such a condition is symptomatic of an inability to buy. In the case of our railroads, for instance, should they in a natural way make large purchases during the next two years their having done so would in itself furnish no suggestion that they were then going to stop buying. Judicious expenditures would reduce operating costs and improve earnings, whereby the railroads would have better credit and there would be greater opportunity to make further improvements, conducing to more economy. It is the prosperous and progressive industry, not the industry that is out at the elbows, that makes a promising customer.

## CORRESPONDENCE

### Progress in Open-Hearth Process

*To the Editor:* I read with considerable interest the article by Willis McKee, on "Progress in the Open-Hearth Process," which appeared in the July 20 issue of THE IRON AGE. Having held supervisory positions in three major departments of the steel industry I can realize the possibilities which the proposed layout has to offer. The relations of all the important developments to each other are well co-ordinated and the construction, as suggested, will not be an experiment. It will be a combination of features which have long since been worked out in a practical way.

While the question of refractories is not solved to complete satisfaction, it is because the refractories which will solve this problem have not had the opportunity of trial. When the atmosphere of the open-hearth can be maintained strictly oxidizing or at least neutral, the refractories will be supplied. With the present furnace port arrangement this is impossible, but will be corrected earlier than expected.

The development of silica brick for furnace roofs has no doubt reached its limit. The roof of the future will probably be constructed of brick made from blends of aluminous clays. At the present time brick from these mixes are produced which will resist higher temperatures than silica. They will not spawl, they have greater strength at both atmospheric and high temperatures, but are somewhat affected by carbon deposition.

Aluminous clay brick are now being used with success in the electric furnace, but are not entirely suited to the open-hearth on account of the limitations set by present open-hearth construction which carries with it poor combustion and carbon deposition.

During the winter the writer made an investigation of the possibilities of open-hearth checker insulation. The saving effected would vary from practically nothing to a point which would materially affect the furnace operation, depending upon the plant considered. It would be economical to enclose the checker chamber in a steel jacket, as suggested by Mr. McKee, if only for the saving of heat effected by insulation, letting alone the great possibilities to be obtained by delivery of the gas and air under pressure. The old idea is that insulation would cause the checkers to burn out; this is wrong. Burn your gas in your furnace and the checkers will take care of themselves. Burn the gas in the furnace and the checkers will have reserve power to do work, and waste-heat boilers will become unnecessary.

It is not because the bulk-head of an open-hearth furnace gets so hot that it burns out rapidly; it is the principal effect of carbon deposition at high temperatures. The proposed new arrangement will largely solve this problem.

C. L. T. EDWARDS,
Laclede-Christy Clay Products Co.

Chicago, July 26.

## STEEL PRICES AND MERGERS

### Western Consumers Send Statement to the Trade Commission

CHICAGO, July 29.—W. E. McCollum, secretary of the Western Association of Rolled Steel Consumers, sent to the Federal Trade Commission at Washington to-day a statement calling attention to "the intimate connection between the Pittsburgh Plus and the steel mergers which are now under investigation by your commission." The statement refers to the condition created in the steel market in February, 1921, when one of the Eastern independent companies announced that it would make such prices as would attract tonnage to its mills regardless of the prices quoted by other mills. "Such prices were made and trade publications show that they were commonly $5 per ton less than prices quoted by the United States Steel Corporation." The statement then says:

> The Western independent mills were compelled to meet these prices, with the result that before the close of the year prices in the Chicago district on plates, shapes and bars receded to a practical level with those prevailing in Pittsburgh, and for the first time in nearly twenty years—over any considerable period—the Pittsburgh base on plates, shapes and bars had vanished, so far as Chicago competition was concerned, although on other products it remained. This, however, was not the result of free competition, but of necessity, born of a time when certain mills pursued the policy above indicated with respect to price.

Mr. McCollum went on to say that "with the only independent mill in the West which rolls a complete line controlled by its Eastern connections, as will be the case if the merger is consummated, the perpetuation of the Pittsburgh Plus, or some similar arrangement, seems to us inevitable. This mill has within a generation grown from nothing to a large and rich organization—it is probably the most successful enterprise of its kind—and it can safely be assumed that its economical operation does not depend upon its merging with some of its Eastern competitors." In conclusion the statement says, after suggesting that the Federal Trade Commission make inquiry into costs of production at various points:

> Our concrete suggestion is that the attorneys in all of these several cases be requested to bear the issues in both cases [the Pittsburgh Plus and the merger cases] in mind and to seek to develop in each case anything that may be important in the other, and to exchange information with a view to getting all of such facts into the record in the Pittsburgh Plus case. In short, we believe that such information relating to the price of steel, the methods of fixing the price, the fairness or unfairness of price, the discriminatory character of price, the practice of Pittsburgh Plus itself and its economic background will normally be developed in the progress of the merger cases, which might not, or perhaps even could not, be developed in the normal progress of the Pittsburgh Plus case within its present scope, and that advantage should be taken of the opportunity presented by the pendency of the merger cases to get such facts into the record in the Pittsburgh Plus case.
>
> We believe the situation presents an extraordinary opportunity to the commission for strengthening its case under the complaint in the action against the United States Steel Corporation, and we sincerely trust that the greatest advantage will be taken of such opportunity.

# EXPORT BUSINESS QUIET

## Light Rail Buying by Japan—Chinese Copper Imports Heavy—German Material in Manchuria

NEW YORK, Aug. 1.—The Japanese market shows slightly less activity and the Chinese market is still dull. There is still some small buying of light rails by Japan. One exporter recently sold a tonnage of 32 miles of 12-lb. rails to a private interest and is handling an inquiry for 16 miles of 35-lb. rails from the Division of Forestry, Formosa. There is also some inquiry for locomotive boiler tubes. Black sheet purchases have fallen off slightly.

In China, although there is no importation of material, the market is fairly active through sales of merchants, who in order to realize cash on their stocks are undercutting the market, resulting in lower prices. Transactions with buyers in the Philippines, although not large, continue highly satisfactory. One exporter dealing with the Far East, has booked orders during the past two or three weeks from buyers in the Philippines for 5500 kegs of nails, about 145 tons of 35-lb. rails and 1500 reels of barbed wire, 85 lb. to the reel. Despite the uncertainties that have prevailed in the political situation in China for many months, imports of copper ingots by Hankow from the United States and Japan have been unusual. From Jan. 1 to May 19, this year, imports totaled 12,847,000 lb. from the United States and 4,706,000 lb. from Japan and other foreign ingots shipped through Shanghai 1,177,000 lb. These figures compare with 14,441,333 lb. of copper ingots imported from the United States and other countries into Hankow in 1921 and 10,950,133 lb. imported from Japan in 1921. These figures are submitted by Consul General P. Stewart Heintzleman, Hankow, China.

It is reported from Manchuria that imports of German material are increasing through the port of Dairen. In 1921 imports from Germany amounted to 1,573,311 gold yen, compared with 48,505 gold yen in 1920 and at the current rate of importation this year's figures will show a decided increase over the figures for 1921. The chief imports in 1921 were iron and steel manufactures, electrical appliances, machinery, medical instruments, locks, etc.

# CZECHO-SLOVAK STEEL INDUSTRY

## Iron and Steel Capacity of the Country—Present Rate of Operation—Exports and Imports

In a recent report to the Bureau of Foreign and Domestic Commerce, Trade Commissioner Vladimir A. Geringer, at Prague, Czecho-Slovakia, describes specifically the situation and capacity in iron and steel production of Czecho-Slovakia. The report says in part: "Of the 47 blast furnaces in the former Austro-Hungarian Empire 27 are in Czecho-Slovakia—10 in Bohemia, 8 in Moravia, 3 in Silesia and 6 in Slovakia. The total annual capacity of these 27 blast furnaces is approximately 1,500,000 metric tons. Since the beginning of March, 1922, five blast furnaces, representing about 27 per cent of the total capacity, have been in operation, producing about 1100 tons of pig iron daily. Need for the waste gas is the reason given for keeping two of these furnaces active. The Prague Iron & Steel Co., which owns eight furnaces, operated none of them from July, 1921, to March, 1922, and then put in operation one furnace when it succeeded in securing cheaper coke from Germany. It is estimated that in January 25,000 metric tons of pig iron, in February 23,000 tons, and in March 34,000 tons were produced.

### Rolling Mill Products

There are in Czecho-Slovakia 42 stationary open-hearth and 3 Talbot open-hearth furnaces, and 5 Bessemer converters, the total annual capacity of which is estimated to be 2,000,000 tons of steel. About 20 to 25 per cent of the steel furnaces are believed to be in operation now, as compared with some 40 per cent in December, 1921. In 1921, 917,662 metric tons of steel of various kinds were produced—75,742 tons of Bessemer steel (8.25 per cent of the total output for the year), 820,995 tons of open-hearth steel (89.47 per cent), 3772 tons of puddled steel (0.41 per cent), and 17,153 tons of electric steel (1.87 per cent of the total). Compared with the 1920 production of 972,976 tons, the 1921 output declined by 6 per cent.

The 16 steel rolling mills of Czecho-Slovakia have a total normal capacity estimated at 2,000,000 to 2,500,000 tons a year, but this production can be substantially increased if business conditions should demand it. Approximately 15 to 20 per cent of total capacity is now being operated. Seven of the largest rolling mills also own coal and iron mines.

Among the chief products manufactured are steel and iron bars, shapes, wire rods, iron hoops, iron or steel strips (hot or cold rolled), girders, beams, angles, T-columns and posts and other structural shapes of iron or steel, rails, splice bars and other track material, sheets and plates of iron and steel, galvanized sheets, tin plate and wrought iron pipe. The output for 1921 was considerably smaller than that for the previous year.

In the last quarter of 1921 the production of the Iron and Steel Combine amounted to 97,800 tons and in the first quarter of 1922 to 56,400 tons. It is believed that the contraction represented by these figures holds true of the operation of other concerns. The reason is said to be the appreciation of the Czecho-Slovak crown and the depreciation of the German mark, whereby the competitive ability of the Czecho-Slovak steel mills has been reduced. While in January, 1922, the steel rolling mills operated at about the same capacity as in December, 1921, completing orders previously received, their operation in February and March declined about 30 per cent. Judging from the orders that are being received it is expected this slowing down of operation will continue.

### Majority of Products Exported

"Local iron and steel plants export from two-thirds to three-fourths of their products. This is because over 55 per cent of the pig iron output of the former Austro-Hungarian Empire is in the territory of the Czecho-Slovak Republic, whose consumption of iron and steel is estimated at 600,000 metric tons annually, while the production capacity is four times as great."

In the portion of the report dealing with exports and imports of iron and steel, it is pointed out that the heaviest imports of pig iron, spiegeleisen and ferroalloys, which totaled 11,116 tons in January of this year, were from Germany, which furnished 6,650 tons. Exports of pig iron, spiegeleisen and ferroalloys in January were 2824 tons. The report continues: "Importation of pig iron from Lorraine and England has been growing recently because it is considerably cheaper than buying domestic iron, notwithstanding transportation costs and customs duties. The circumstance that pig iron is also exported from Czecho-Slovakia can be explained by the fact that the Vitkovice Mining & Iron & Steel Co., which manufactures pig iron principally for sale, has its natural markets in Poland and Austria, and would rather maintain those markets even at a loss than to sell at home, which would probably cause a damaging decline in domestic prices.

### Not an American Market

"France, Sweden, Denmark, Portugal and Great Britain sent chiefly pig iron, while shipments from the United States were highly manufactured products. There is no possibility of importing iron and steel from the United States under present conditions, especially in view of the low value of the German mark. Furthermore, American exporters would have to adjust their prices to German, English and Lorraine prices. The English iron, considering its quality, is regarded as a very good purchase." Exports of iron and steel from

Czecho-Slovakia, amounting to 16,575 tons in January, were chiefly distributed among Austria, Germany, Hungary, Poland, Jugoslavia, Rumania, Great Britain and the United States (24 tons). Much of the iron and steel shipped to Germany was re-exported to other countries.

Notwithstanding the estimated annual capacity of the country for iron ore, considerable quantities must be imported. In 1921 imports of pyrite, iron ore, manganese ore and others totaled 564,672 tons, while exports were only 99,691 tons. The growth in imports indicates that domestic ores are continually giving way to imported ores, for the reason that domestic ore contains less iron and requires therefore a greater quantity of coke, which is costly. A ton of pig iron produced from Slovak ore costs, according to the latest estimate, almost twice as much as does a ton of iron manufactured from Swedish ore.

# Effects on German Industry of Decline in Exchange

## Exchange Conditions Similar to Austrian and Russian Seem to Be Inevitable—British Coal Imported—Need for Capital—Pig Iron Again Advances

*(By Correspondence)*

BERLIN, GERMANY, July 17.—The Berlin printers have been on strike for a fortnight, but a settlement has at last been arrived at with the aid of the Government. The absence of reliable news has been felt keenly and the heavy fluctuations in exchange were no doubt accentuated by uncontrolled information and rumors. Paper money has not been printed during the strike, so that the wish of economists has been realized for a short time.

Dissatisfaction is evident in the mining industry. Members of the miners' union are threatening to strike unless the general agreement in the mining industry is altered. The difference over the question of working hours has been adjusted, but the wage increase has almost been surpassed again by the recent depreciation of the mark and the consequent rise in prices. The men ask for weekly payment of wages, instead of monthly, for alteration in the piecework system and in the position of their representatives (Betriebsräte) on the board of management. According to the latest reports, through the efforts of the Minister of Labor, a stoppage of work may be avoided.

Negotiations in Berlin on miners' wages have led to an increase of 70 marks per shift on the wages of June 1. The miners' union had originally asked for an increase of 35 marks on the June wages to counterbalance depreciation in the purchasing power of the mark, but it was realized that a substantial inducement was needed to keep the colliers from going into other industries paying higher wages. The socialist miners' union has advised its members to strike Aug. 1, to enforce a new agreement. This action of the union will add considerably to the uncertain position of trade and industry.

### British Coal a Factor in Situation

British coal is appearing in the German market to such an extent that even the lignite producers are anxious about their trade, especially in the coastal districts. To increase the import of British coal to alleviate the scarcity in Germany, the Government allows the imported coal (except from Czecho-Slovakia and Polish Upper Silesia) to be sold without any rationing restrictions, and it is taxed only to the same extent as the home product.

Reparations coal is drawing heavily on the German production, and the Government has asked the Reparations Committee for permission to have British coal shipped to France instead of sending German coal. This is changing the reparation in goods into reparation in currency, to improve the coal situation, and will probably help in inflating the mark.

According to reliable reports coal imports were 1,200,000 tons in June, which is about 60 per cent more than in pre-war years. There has been a decline in orders for imported coal in the Rhenish-Westphalian district, but industry along the coast and shipping firms are ordering large quantities.

With the rise in coal, the prices for pig iron have gone up again. Pig iron prices, which had been fixed only on June 29, after lengthy negotiations with the representatives of labor, through a 476 m. increase in coke, have again been increased as follows per metric ton:

| | Marks Amount of Increase | Marks Present Price |
|---|---|---|
| Hematite | 595 | 8,265 |
| Foundry iron No. 1 | 654 | 7,915 |
| Foundry iron No. 3 | 554 | 7,845 |
| Foundry iron, Luxemburg | 642 | 7,073 |
| Steel making, low in copper | 595 | 7,845 |
| Siegerland, steel making | 595 | 7,845 |
| Spiegeleisen, 8 to 10 per cent | 690 | 8,929 |
| Malleable pig iron | 619 | 8,209 |
| Ferromanganese 80 per cent | 1,285 | 17,353 |
| Ferrosilicon | 1,070 | 10,120 |

### German Industry in Need of Capital

German bankruptcies have continually decreased during the first half of 1922, and reached 88 in June, the lowest number in the past two years; 676 bankruptcies have been declared in the six months, against 1610 during the same period of 1921.

There is an unabated need for capital by industrial concerns, the capital of which amounted to 11,873,200,000 marks during the second quarter of 1922, compared with 4,196,000,000 marks during the same period of 1921. In June, 1922, increases in capital took place in 296 cases to the amount of 3,279,000,000 marks, equal to 73.5 per cent against 216 cases, with 1,540,000,000 or 88.5 per cent in June, 1921. New enterprises from April to June, 1922, were principally started in the following industries:

Machinery (59), commerce (59), metalworking (49), wood (42), chemicals (39), textile (38), food (32), coal and peat (11).

Prices are rising generally, the average wholesale index number of the Federal Statistical Office showing an increase from 6458 in May to 7030 in June. The index number for food increased from 5847 to 6405 and for metals from 6489 to 7029; for coal and iron from 7061 to 7469; and for industrial products together from 7602 to 8197. The exchange value of the mark decreased far more during this time, and it is interesting to recall that the dollar stood at 186 marks on Jan. 2 against 502 on July 7. The recent inflation of German currency is not yet noticeable in prices but they show a strong upward tendency.

During the Genoa conference German exchange was fairly stable and the rising prices threatened to restrict export. The crisis in German trade and industry, which had been predicted for months, seemed imminent. Manufacturers opened the question of reduction in wages and increase in working hours. There were even extensive strikes and lockouts in the South, causing enormous losses, and wage agreements were arrived at only after lengthy negotiations. The whole situation has now radically changed. The failure to stabilize the currency caused the mark to resume its downward movement, which lately has assumed such dimensions that conditions of exchange similar to those of Austria and Russia seem inevitable.

There is evidently no prospect now of a change in the German industrial position. With a few exceptions, German industries have orders for several months, and as buyers realize that prices will not come down, new orders are placed more frequently. There is, however, not so much speculative buying as on previous occasions when the mark dropped, as firms are selling only on a sliding price scale now and require a long time for delivery. Everybody with a stock of material is keeping it, for fear of losses through the depreciation of the currency. Some firms are sold up until 1923 and are declining further orders. Associations in cast iron, steel and hardware announce heavy increases in their prices. The number of unemployed is constantly diminishing. Berlin, for instance, had only 8442 on the lists at the end of May against 58,471 at the beginning of the year.

Imports are largely a question of delivery. With the declining German exchange home supplies are always cheaper than foreign material, but works are generally unable to meet the demand. To supply their customers manufacturers are paying a higher price for imports rather than be delayed in production through shortage of material.

According to a preliminary statement of the Government Statistical Office the imports in May amounted to 3,810,000 metric tons, valued at 32,400,000,000 marks, and exports to 2,090,000 tons, valued at 27,200,000,000 marks. The imports increased by 920,000 tons compared with April. Exports were, however, 82,700 tons less.

Depreciation of the mark has again relieved industry of anxiety as to the future, especially in export, but it is realized that this is only a temporary condition, and that provision must be made for the time when the mark becomes more stable. Some firms are even accepting export contracts with the stipulation that the customer be allowed to withdraw if German prices rise above the world's level. It is the constant complaint of German customers that goods needed in the domestic market are sold for export because of the higher prices obtainable. There is an undiminished home demand, but it is only when export is slackening that German manufacturers receive sufficient supplies. Should exports cease, the German market is capable of absorbing most of the industrial products for some time, and it is this fact that exporters reckon with at present.

It is also held in some quarters that demand from the Russian market may prevent serious shocks to German industries if endeavors to develop trade to that country meet with success. The Treaty of Rapollo seems to have stimulated considerably the opening up of trade relations between the two countries. New companies have been formed in Upper Silesia and in the Rhenish districts for trade with Russia and negotiations are being conducted in several industries to form syndicates for the same purpose.

### Manufacturers Import Despite High Prices

The catastrophal fall in the mark recently has led to a temporary decline in German orders for iron and steel in the Saar district. Rumors of a moratorium have again stimulated buying, but business is done on only a small scale. The present value of the mark offers no inducement to the German importer but the latest increases in domestic prices of iron and steel reduce again the margin between the German and the imported product. Hence manufacturers are willing to pay a higher price rather than be delayed in production for want of material. The higher prices of imported material are moreover counterbalanced by the prices being fixed while German firms are selling "freibleibend" (prices subject to change), and by the certainty of prompt delivery. The question of delivery within the specified time has not been treated with proper consideration by German manufacturers, and export orders are being canceled because of delayed delivery. Irregular supplies of fuel and raw materials are generally the cause. The question is, however, frequently discussed, as the German export trade is losing its reputation through the carelessness of some manufacturers in supplying their foreign customers.

In the south of Germany, Saar, Luxemburg and Lorraine iron and steel products still predominate, as it is impossible to procure sufficient home material. The demand in semi-finished material, especially in bar iron, is brisk, as the machinery industry is again in the market. As imports must be paid for in francs, the trade depends on the rate of exchange and business is largely a matter of speculation in foreign bills. The following quotations in marks per metric ton for "Right" and "Left" Rhenish material show the considerable difference between domestic and imported products.

| | Left Rhenish (Saar, Luxemburg, Lorraine) | Right Rhenish (German) |
|---|---|---|
| Bar iron | 21,700 to 23,900 | 15,590 to 17,800 |
| Structural shapes | 20,600 to 22,800 | 15,370 to 17,580 |
| Hoop iron | 23,980 to 26,190 | 17,480 to 19,690 |
| Universal iron | 22,900 to 25,200 | 16,800 to 19,100 |
| Sheet, heavy | 6,500 to 11,300 marks higher | 17,350 to 19,480 |
| Sheet, medium | | 19,220 to 21,400 |
| Sheet, light | | 20,560 to 22,740 |

A meeting of the representatives of manufacturing and wholesale firms has been held in Düsseldorf to discuss arrangements for the importation of ferrosilicon. It was agreed that the home product should receive some protection but, because of the absence of representatives of consumers, the meeting was postponed until September. In the meantime import permission will be given if proof can be furnished that the home production is insufficient to meet the demand. In all other cases permits shall be issued only if the imported material is 5 per cent cheaper than the German product.

Some American companies, well known over here in the machine tool line, were again in the market lately and in strong competition with German makes. The German machine tool industry made great progress during the war, but some American specialties are still in favor, and will find a good market if the price is not prohibitive. The exchange rate is at present a deterrent.

New manganese ore deposits have been found in Ungaria in the Vesprimer Komitat. A new company, in which the German Bank is largely interested, has been founded with a capital of 120,000,000 kronen to exploit the deposits.

## Revolution or Stroke Counter

A Universal model counter, which, among other uses, is adaptable to punch presses, stamping presses and coal conveyors, is being marketed by the Precision Machine Co., Milwaukee. The device is shown in the accompanying illustration and can be used either as a revolution or a stroke counter.

In this design all wheels are locked when not counting, and all are interchangeable. No lead gear or lock washers are used, also no ratchets, ratchet pawls or springs. Gears are of steel and important parts are hardened. Transparent fireproof material is used in place of glass to cover the numbers and readings are legible at a distance of twelve feet. The counter is unusually light in weight and has an unlimited amount of overstroke which provision eliminates the necessity of particular care in setting the connection rod.

Revolution or Stroke Counter for Use on Punch and Other Presses

It is claimed that the device will operate as satisfactorily at 1000 r.p.m. as at any slower speed, a test of a counter at that speed for six weeks and running more than 300,000 trips a day being said to show no appreciable wear. Electrical contacts permitting the location of the counter in the office or elsewhere at a distance, a method particularly applicable to coal conveyors, can be provided.

# FABRICATED STEEL BUSINESS

## Bridge and Building Awards and Tonnages Pending at Leading Centers

Awards for fabricated steel work for the past week include the following:

New York County Court House, 9000 tons, to New York Shipbuilding Corporation, Camden, N. J.

Office building, Stapleton, Staten Island, New York, 400 tons, to Paterson Bridge Co.

Sterling Hall of Medicine, Yale University, New Haven, 700 tons, to Levering & Garrigues Co.

International House, Riverside Drive, New York, 1200 tons, to Taylor-Fichter Steel Construction Co., fabrication, it is thought, to be done by American Bridge Co.

Loft building, Brooklyn, 500 tons, to the Hay Foundry & Iron Works.

Hospital building, Elmira, N. Y., 300 tons, to the American Bridge Co.

Apartment house, New York, 1800 tons, to the American Bridge Co.

Tanks for the Sinclair Consolidated Oil Corporation, 7000 tons, to Riter-Conley Co.

Western Electric Co., Hawthorne, Ill., wire drawing plant, 1400 tons, to McClintic-Marshall Co.

Broadway Department Store, Los Angeles, Cal., 1100 tons, to Baker Iron Works.

J. B. Book junior office building, Detroit, 1100 tons, to Russell Wheel & Foundry Co.

Agricultural Building, University of Illinois, Urbana, 462 tons, to an unnamed fabricator.

Exchange National Bank Building, Pittsburgh, 275 tons, to Fort Pitt Bridge Works.

Hyde Park Y. M. C. A. Building, Chicago, 240 tons to Vierling Steel Works.

Chicago & Northwestern deck plate girder spans over Milwaukee River, near Lindwerm, Wis., 215 tons, to American Bridge Co.

Illinois Northern Utilities Co., power station, Dixon, Ill., 150 tons to Indiana Bridge Co.

State terminal pier, Portland, Me., 1000 tons, to McClintic-Marshall Co.

### Structural Awards

Ideal Concrete Machinery Co., Cincinnati, 103 tons, to Dayton Structural Steel Co.

Addition to plant of Warner Elevator Co., Cincinnati, 220 tons, to Fort Pitt Bridge Co.

Warehouse for National Biscuit Co., Cincinnati, 100 tons, to General Iron Works Co.

Addition to plant of Littleford Brothers, Cincinnati, approximately 100 tons, to Fort Pitt Bridge Co.

Power house for Ottawa Silica Co., Ottawa, Ill., 100 tons, to Lakeside Bridge & Steel Co., Milwaukee.

Plant for Lafayette Motors Co., Indianapolis, at Milwaukee, 750 tons, to H. K. Ferguson Co.

Transmission towers, Appalachian Power Co., Chalkroad, W. Va., 600 tons, to American Bridge Co.

Dam No. 44, Ohio River, 300 tons, to American Bridge Co.

Highway Bridge, Kent, Conn., 300 tons, to American Bridge Co.

Bridge No. 2 over Allegheny River, 300 tons, to American Bridge Co.

Michigan Lafayette Building, Detroit, 1700 tons, to McClintic-Marshall Co.

### Structural Projects Pending

Inquiries for fabricated steel work which may be added to lists of pending projects include the following:

Federal Sugar Refining Co. building, Yonkers, N. Y., 200 tons.

Bridges for the New York Central Railroad, 400 tons.

Highway bridge for Paterson, N. J., 600 tons.

Oil tanks for the J. G. White Engineering Corporation, New York, 400 tons.

Highway bridge for Baltimore, 400 tons.

State Capitol Building, Lincoln, Neb., 2100 tons, Westover Steel & Iron Co., Paxton & Vierling Iron Works and Omaha Steel Works, low bidders, respectively, on three alternates.

American Can Co., new building, New Orleans, 185 tons.

Addition to Carter Building, Houston, Tex., 670 tons.

Pullman Co., Pullman, Ill., foundry building, 1000 tons, Frank D. Chase, Inc., engineer.

Open hearth furnaces, Otis Steel Co., 6000 to 6500 tons.

Forge building for the Frick Co., York, Pa., 450 tons.

## Railroad Equipment Business

Orders for locomotives and new cars, particularly freight, continue to appear and large orders for the repair of old cars are still a feature. The number of locomotives and idle cars at the present time is not regarded as sufficient by some railroad executives and the possible settlement of the railroad and coal strikes is expected to increase the demand for both.

The largest single order for new locomotives placed last week was for the account of the New York Central Railroad. This was for 150 modern freight locomotives of the Mikado type, of which the American Locomotive Co. is expected to supply half and the Baldwin Locomotive Works half.

In addition to the orders placed many roads are in the market for new engines. The Union Pacific is inquiring for 55 Mountain type and 15 Santa Fe type locomotives, and the Chicago, Indianapolis & Louisville is in the market for five Mikado engines and two of the Pacific type. Bids for the repairing of 75 locomotives are in the market now.

The Norfolk & Southern Railroad to-day applied to the Interstate Commerce Commission for permission to issue first lien equipment notes to the value of $375,000 for the purpose of rebuilding 397 bad order cars, requiring the installation of steel underframes and center rails.

The Union Pacific Railroad is inquiring for 10 mallet type, 55 mountain type and 15 Santa Fé type locomotives.

The Nickel Plate Railroad has placed orders for 15 freight engines with the Lima Locomotive Co.

The Monon is inquiring for 2 Pacific and 5 Mikado type engines.

The Baltimore & Ohio Railroad wants 15 Pacific type engines in addition to the freight engines it recently ordered.

The Chicago, Rock Island & Pacific has placed orders for repairs on 500 wooden box, 500 furniture and 500 steel frame box cars with the Western Steel Car & Foundry Co.

The Missouri Pacific has let repairs on 1250 gondola cars to the American Car & Foundry Co., on 1000 to the Sheffield Car & Equipment Co. and on 250 to the Mount Vernon Car Mfg. Co.

The Burlington has let repairs on 500 general service cars to American Car & Foundry Co. and on a like number to the Keith Railway Equipment Co.

The Chesapeake & Ohio has let repairs on 1500 hopper cars to the American Car & Foundry Co. and is inquiring for 50 steel frame refrigerator cars.

The Seaboard Air Line has placed repairs on 400 cars with the Magor Car Co. and still has repairs on 1000 cars to place.

The Tennessee, Alabama & Georgia is inquiring for 20 box and 20 composite gondola cars.

The Northern Pacific has placed 70 passenger service refrigerator cars with American Car & Foundry Co.

The Pittsburgh & West Virginia Railroad has placed 8 coaches, 1 passenger and baggage, 2 passenger, mail and baggage, and 2 baggage cars with American Car & Foundry Co.

The Philadelphia & Reading has ordered 5 baggage and 5 baggage and mail cars from American Car & Foundry Co.

The Wilcox Co., Chicago, is inquiring for 50 hopper cars.

The San Antonio, Uvalde & Gulf Railroad is in the market for 25 ventilated box cars and 25 composite gondola cars.

The Winston-Salem Southbound Railroad is inquiring for 6 coaches and 3 baggage and mail cars.

The Baltimore & Ohio has placed 500 gondola repairs each with the Pullman Co. and Illinois Car & Mfg. Co.

The Lehigh & New England is inquiring for 150 ton gondola cars and the New York Central is reported to be in the market for 50 King-Lawson air-dump cars.

# Working Out Coal Distribution Plans

## Large Place of State Organizations—How an Industrial Consumer in Need Proceeds—Personnel of Committee in Charge

WASHINGTON, Aug. 1.—The President's committee in charge of fuel distribution is completing its organization and it was stated by officials that it probably would be in complete operation on Wednesday. The organization has headquarters in the American Railway Association building on Eighteenth Street, across from the Interstate Commerce Commission Building.

Regardless of how soon the labor situation is entirely ended, however, it was said yesterday by Secretary of Commerce Hoover that coal and car distribution will be necessary for an indefinite period, estimated at 30 to 60 days. The iron and steel industry, as is evidenced from reports coming to Washington, is watching developments closely, but is showing no signs of being unduly alarmed. The greater producing companies, it is declared, have considerable coal on hand and can go along with restricted output for some time before, as a whole, there is an acute pinch felt.

First priority orders, aside from those for fuel for railroads, will be for shipments to the Northwest and New England. The President's committee is already engaged in checking up coal supplies on hand, needs for preferred industries, and consumers, States, etc.

### Some Requests for Modification of Orders

Before the fuel distribution administration had organized, representatives of some industries, claiming to be on the preferred list, began to make inquiries as to how to get coal. The tendency to resort to individual priority orders, however, has not been strong so far. While the fuel distribution (President's) committee and the central purchasing committees of the railroads were setting up their organizations, requests for modifications of the car service orders were coming to the Interstate Commerce Commission. Representations were made on behalf of users of open top equipment, moving such material as sand, gravel, brick, rough lumber and stone, for a change in the orders that would permit for their use flat or mixed bottom open tops cars with sides higher than 36 in. inside measurement. Changes in the immediate future, however, do not seem probable.

Embargoes against all freight but coal, live stock and fuel oil declared by the Chesapeake & Ohio and the Norfolk & Western were declared in order to hasten the movement of these commodities, which are on the preferred list, these lines being two of the chief arteries which serve operating mines at present.

### Procedure in Securing Coal

Reduced to the simplest form, the working plan for distribution of coal and cars is as follows: The consumer, unable to get coal through his regular channels, applies to the State committee. The State committee distributes the quota that has been alloted, if any has been alloted. In the event the State has no coal, appeal is made to the presidential committee in Washington. This latter committee then will deal with the central committee of coal operators. The central committee in turn makes requisition on the district committees.

It is always to be kept in mind that the iron and steel, or any other industries, will get coal in their usual way, provided the coal is available and has not been allocated to consumers on the preferred and priority list included in the car service orders of the Interstate Commerce Commission, which has general supervision over the distribution of cars. Obviously, the iron and steel industry, being in the "other purposes," or lowest classification, will have to wait until the demands of those on the preferred list are filled. Where there is not a sufficient supply either of coal or of suitable open top equipment, 36 in. in height, the industry necessarily will have to suffer. Preference for the class equipment mentioned is to be supplied for consumers on the priority list, but it does not include flat bottom gondola cars with sides less than 36 in. in height, or cars equipped with racks, or cars which on July 1 had been definitely retired from service for the transportation of coal and stenciled or tagged for other service.

### Likely Preferences in Steel Trade

The list of consumers and commodities included in the orders of the Interstate Commerce Commission manifestly is subject to revision or amplification, and because of this, it is conceivable that certain units of the iron and steel industry, as for instance tin plate, oil country goods, steel for building new and repairing old cars, etc., may be given preferred listing, though there has been nothing to indicate that this plan is in contemplation at present.

Secretary of Commerce Hoover, chairman, Secretary of the Interior Fall, Attorney General Daugherty, and Commissioner Aitchison of the Interstate Commerce Commission, constitute the Presidential Committee, which has general supervision of the measures for the distribution of coal and the restriction of unfair prices. Acting in this capacity, Mr. Hoover has selected C. E. Tuttle, of the Tuttle Coal Corporation, New York, as advisor on the Lake situation. Mr. Tuttle, whose experience has familiarized him with this situation, will advise as to the coal tonnage going to the Lakes and as to its distribution in the Northwest. It was stated by high Government officials that it is not believed there will be any interruption of the movement of iron ore traffic from the upper mines to Lake Superior ports because of the sufficiency and the type of equipment used in that service.

Control of distribution of available coal supplies on a priority basis to essential industries and utilities is, of course, under the direction of Henry B. Spencer, the administrative member of the President's Committee, formerly vice-president of the Southern Railway and general purchasing agent under the one-time Railroad Administration. Mr. Spencer assumed his duties in Washington last Saturday. The selection of Mr. Spencer as fuel distributor was followed by a statement at the White House expressing confidence that production of coal, regardless of rail and mine strikes, eventually would be adequate to meet requirements. While the statement by some was thought to be somewhat over-optimistic, it did provide a cheering tone for the iron and steel and other industries, whose output had been restricted owing to fuel shortage, because it was associated with plans to bring the rail strike to a quick end and with the hope that the coal strike also will not be of much longer duration.

In view of other futile attempts to end the strike, the public is apparently in a waiting mood to see what actually materializes before becoming over-confident as to results. The plan of the Federal Government to put upon each State the entire responsibility for the distribution of coal within its own borders, together with other parts of its program, was accepted as recognition of the necessity to omit no details for a rigid control, such as might be necessary if the coal and rail strikes are not settled in the near future.

Secretary Hoover has been given assurances from practically all those coal producing States to which he has appealed that they will, as was suggested, take all responsibility for the distribution of coal within the borders of their respective commonwealths and do all

they can to end profiteering. It is the purpose of the Presidential Committee to see that the States get coal from operators at a fair price and that each State gets its quota.

**Coal Exports Practically Prohibited**

As a means of further conserving the available coal supply, Mr. Hoover notified the coal bunkering trade to bunker ships only to the nearest port of call. No exports of coal are to be permitted although urgent requirements in the West Indies will be given consideration. Foreign ships also have been notified to bunker at their own ports for complete trips and Canada has been advised not to rely on the United States for its entire supply of coal, but to import as much fuel as possible.

Under the plan set up by the Presidential coal distribution committee, distribution for railroad use will be directed from Washington, but with the possible exception of a few interstate public utilities, the responsibility for all other distribution will rest upon organizations created under State control.

## SITUATION IN PITTSBURGH

### Views Toward Strike Ending Proposals—Stocks, Prices and Production Rates

PITTSBURGH, Aug. 1.—Suggestions from Washington and elsewhere that this week would bring a conclusion of the twin strikes—coal and railroad—are received here with considerable skepticism. While everyone hopes for the best, most are prepared for the worst. A meeting of 148 railroad officials is considered to be less likely to "get anywhere" than a smaller group, because there will be so many to be heard and also because there is certain to be a sharp division of opinion on the main question at issue, that of restoring old seniority ratings to the strikers. No doubt, many railroad officials will be willing to concede this demand of the men for the sake of peace, but there is a feeling among traffic men here that such a move will find much opposition, if for no other reason that any such discipline as the railroads have been able to establish since the railroads reverted from Governmental to private management would be destroyed. To allow the men, who in spite of warnings that they would lose their ratings if they went out and who were given plenty of opportunity to hold them after having gone out, to go back now at the same places in the seniority lists, it is argued, would be tantamount to a declaration by the officials that the men could strike any time and not suffer in their positions as to promotion and pension privileges. The suggestion that an appeal will be made to the President for a month's period of grace in which to meet strike conditions strengthens the idea that getting the officials into line is not going to be an easy matter. That the railroads are suffering from the strike is too evident to be denied, but it also is a fact that the places of the strikers have been filled to a larger extent than is comfortable to the men who have gone out.

With regard to the coal strike, there is a very strong sentiment among operators here to "fight it out" and little disposition among owners of union mines to abandon their original position of being willing to make an agreement with the men of this district. The "four State" agreement finds no supporters here and the number of operators now taking a stand on the side of the open shop idea is greater than when the strike began. Assured of ample protection, by the State and Federal authorities, there is a strong movement on foot to open the mines without recourse to agreements of any sort. In this connection, the aggressive stand of the Pittsburgh Coal Co., which is the largest single producing unit in the district and which during the first three months of the suspension was inclined to pursue a passive policy, is commented upon. This company has succeeded in starting up some of its idle mines in Washington County and is now least disposed of all producing units to enter a conference with the union leaders.

In the non-union Connellsville district, where so many mines are owned by the steel companies, no consideration at all has been given the idea of a conference. The steel companies' mines are not commercial ventures; their output goes directly to the plants of the owners and since steel plant operation is on an all-the-year-round basis, miners there have more constant work than those employed in strictly commercial mines. It may be that operators in some other districts may get together with the union officials and frame an agreement, but it may be set down that the present attitude of most Pittsburgh district operators is in opposition to other than a district agreement and also to a continuance of the check-off system, which made the operators collectors of union dues and assessments.

**Low Coal Stocks**

There has been very little change in the strike situation in the week in this district. The gain in production has been very slight. There does not seem to have been any easing in the railroad congestion and deliveries of Southern coal still are much restricted. The reserve stocks of the steel companies are getting dangerously low and some see a complete or nearly complete suspension before there can be any relief. If the railroad and coal strikes were to end immediately, there is doubt that the prospect would be much helped, since the operation of the priority system would mean the movement of coal to those consumers having preference over the iron and steel industry.

It is the interpretation of Secretary Hoover's plan that the steel companies owning mines would not be able to control their own coal, save those who have their own rail lines for hauling it or who can ship by water. The latter is one avenue that is open to the Pittsburgh steel mills not open to other districts. River traffic is outside the scope of the Interstate Commerce Commission and if the river mines can be operated, Pittsburgh would be able to get coal and the mills could be kept going.

**Easier Coal Prices, but Higher Coke**

Coal prices have eased off a little since a week ago, due to buyers withdrawing from the market in the belief that denial of cars to those seeking exorbitant prices will have a salutary effect. Some operators are falling in line with the price ideas of Secretary Hoover, but there are quite as many who went through with the Government's "fair prices" plan two years ago, who saw others reap a golden harvest and who now are inclined to ask "all the traffic will bear" in the idea that no harm can come to them. Coke still is very hard to obtain and as costly, if not more costly, than a week ago. Recent sales generally have been around $15 per net ton at oven for bee hive oven foundry coke, but there have been instances where more, even up to $17.50 has been paid. Coke is coke these days and the price is the same whether it is for furnace of foundry use.

Operations in the Pittsburgh district plants are holding up fairly well, but a decline is immediately ahead, owing to the light reserves and the difficulty in getting new supplies of coal.

### Waiting Developments at Uniontown

UNIONTOWN, PA., July 29. — Independent coal and coke operators of the Connellsville bituminous region, while feeling that tentative prices of coal at $3.50 under Federal regulation, are rather low with present production costs, are going along with the Government plan of distribution and priority. Out of the present strike emergency, it is believed, will grow a permanent

association of operators in Fayette and Greene counties. The skeleton of this association already has been formed with some 50 operators as members.

Widespread comment developed in the region this week with the publication of a statement from Washington that the Department of Justice had promised complete investigation into the alleged activities of foreign societies and lodges in the region in intimidating workers, preparing letters and directing a campaign to keep miners away from the jobs.

George Whyel, president of the new operators' association, stated that the average production in the region would be around 20 per cent at the present time. H. C. Frick Coke Co. production is around 35 per cent this week. Little actual change has been noted. The possibility of a settlement of the bituminous strike has had the effect of keeping many men away from work who otherwise would have returned.

## Railroad Executives Reject the President's Proposal for Seniority Rights

Railroad executives in session at the Grand Central Terminal, New York, on Tuesday, Aug. 1, rejected the proposal of President Harding that striking shopmen be reinstated without forfeiting seniority rights, but accepted conditionally the other two suggestions of the President for the settlement of the strike. The meeting was attended by the executives of 148 of the principal railroads of the country. President Harding's proposals were as follows:

"1. Railroad managers and workers are to agree to recognize the validity of all decisions of the Railroad Labor Board and to faithfully carry out such decisions as contemplated by laws.

"2. The carriers will withdraw all lawsuits growing out of the strike, and Railroad Labor Board decisions which have been involved in the strike may be taken in exercise of recognized rights by either party to the labor board for rehearing.

"3. All employees now on strike to be returned to work and to their former positions, with seniority and other rights unimpaired. The representatives of carriers and representatives of organizations especially agree that there will be no discrimination by either party against employees who did or did not strike."

The action of the executives was telegraphed to the White House late Tuesday afternoon, as soon as it had been drawn up by a sub-committee headed by Judge Robert S. Lovett of the Union Pacific and approved unanimously by the general conference.

CHICAGO, Aug. 1.—Executives of the six federated railroad shop crafts went into conference today to consider President Harding's proposal for a settlement of their strike. It was stated that the discussion probably would be finished by noon of Wednesday. One proposition to come before the meeting is that the striking shop crafts settle their strike with such roads as are willing to agree to the President's proposals, regardless of whether all the roads agree to them.

## Indianapolis Chamber of Commerce Champions Open Shop

In response to a resolution setting forth that the effect of the demands of the striking coal miners and railroad workers means that the non-union shopmen who have taken the places of the strikers would be deprived of their positions to make room for the striking craftsmen; also that loyal employees remaining in the service of the companies and who would have greater seniority rights than returning strikers, would be displaced to make room for the strikers, tending to force all non-union shopmen to become members of the union, bringing about the closed shop on the railroads, the board of directors of the Indianapolis Chamber of Commerce adopted a resolution July 21 in favor of the open shop.

The resolution urges that "this un-American attempt at compulsory unionism be relinquished and that all men shall have the lawful sanction of the government to the exercise and enjoyment of their legal right to pursue a lawful vocation without interference or molestation."

Protest against any settlement of either the coal or railroad strikes which carries with it the discharge of any loyal non-union worker, is voiced.

Protest is also expressed against reference to loyal railway employees as "strike breakers," inasmuch as the Railroad Labor Board has publicly announced that new employees and old employees who refused to strike "are not strike breakers seeking to oppose the arbitrary will of an employer on employees. They have the moral as well as the legal right to engage in such service of the American public and to avoid the interruption of indispensable railway transportation and are entitled to the protection of every department and branch of the government, state and nation.

## 1920 Wages in Kentucky-Tennessee District

The joint arbitration board of the Kentucky-Tennessee district, in session at Cincinnati, July 28, decided to restore the wage scale of 1920 to union coal miners in the section around Pineville, Ky., to a few mines in the section around Nashville, Tenn., and to mines along the line of the Tennessee Central Railroad. The award grants an increase of wages amounting to 24c. a ton to pick and machine miners; 20 per cent increase on yardage and dead work, and $2.50 a day to datal and monthly men. The award is not a recognition of the union, but is simply a resumption of the 1920 wage scale with the miners as individuals.

## State Fuel Distributers

WASHINGTON, Aug. 1.—Federal Coal Distributer H. B. Spencer this afternoon was advised of the appointment of the following State fuel agencies:

Alabama, Hon. Roy R. Cox, fuel administrator, Montgomery.

Connecticut, Public Utilities Commission, Hartford.

Florida, Florida Railroad Commission, Tallahassee.

Illinois, Robert M. Medil, distributer, Department of Mines Shipping Field.

Indiana, Indiana Public Service Commission.

Iowa, Charles Webster, fuel administrator, Des Moines.

Kansas, Committee of Industrial Relations, Topeka.

Kentucky, J. Sherman Cooper, chairman Railway Commission, Frankfort.

Massachusetts, Fuel Adminstrator, Boston.

Michigan, State Administrator Board, Lansing.

Nebraska, State Railway Comission, Lincoln.

New York, committee composed of representatives of the port authority, the Public Service Commission, the Transit Commission and the Attorney General.

North Carolina, State Corporation Commission, Raleigh.

North Dakota, Railroad Commission, Bismarck.

Pennsylvania, Public Service Commission.

Rhode Island, George H. Webb, Fuel Administrator, Providence.

South Carolina, Hon. B. E. Gerr, chairman Governor's Coal Committee, Greenville.

Tennessee, State Commission, composed of W. N. Beasley, representative of Public Utilities Commission, Wilbur A. Nelson, State Geologist, T. F. Peck, Agricultural Department and C. P. Pile, Bureau of Mines and Mining.

Vermont, J. M. Jones, State House, Montpelier.

Virginia, Maj. Alexander Forward, Coal Administrator, Richmond.

West Virginia, J. Walter Barnes, Fuel Commissioner, Charlestown.

Wisconsin, Edward Norman, Commissioner of Markets, Chairman; L. S. Gettle, Chairman of Railroad Commission, John G. Mack, State Chief Engineer, J. B. Borden, Secretary Board of Public Affairs.

# JULY PIG IRON OUTPUT

## Loss in July 1281 Tons Per Day as Compared with June

### Twenty-six Furnaces Blown Out or Banked, Five Blown In

The immediate effect of the railroad strike in conjunction with the coal strike on the country's pig-iron output has been a large reduction in the number of blast furnaces in active operation. There were 26 furnaces blown out or banked in July and 5 blown in, resulting in a net loss of 21, or the largest since late in the depression a year ago. The July output, however, was larger than that for June and closely approaches the output for January, 1921, which was the largest in the last 17 months. The actual loss in daily output in July from that in June was 1281 tons per day.

The production of coke and anthracite pig iron for the 31 days in July, from data collected almost entirely by telegraph, amounted to 2,400,045 gross tons, or 77,421 tons per day, as compared with 2,361,028 tons, or 78,701 tons per day in June, a 30-day month. The increase in the July total output over June was 39,017 tons, contrasting with a loss in daily rate of 1281 tons. Last year the July output was only 864,555 tons.

The total number of furnaces in blast on Aug. 1 was 171, as compared with 192 on July 1, with 175 on June 1, with 162 on May 1 and with only 69 on Aug. 1, 1921, the low point in last year's depression. The capacity of the 171 furnaces in blast on Aug. 1 is roughly estimated at 71,500 tons per day, but the usual table of capacity in detail must be postponed to a later issue. On July 1 the 192 furnaces in blast had an estimated capacity of 81,845 tons per day. In July there were 26 furnaces blown out or banked and 5 blown in, a net loss of 21 furnaces. In June there was a net gain of 17 furnaces, so that the effect of the combined strikes has been to cancel the gain registered in June.

The manganese-alloy output made a new record on this movement in July, with a total production of 26,059 tons, or the largest since March, 1921. Of this total, 18,881 tons was ferromanganese and 7178 tons was spiegeleisen.

### Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from July, 1921, is as follows:

*Daily Rate of Pig Iron Production by Months—Gross Tons*

| | Steel Works | Merchant | Total |
|---|---|---|---|
| July, 1921 | 23,086 | 4,803 | 27,889 |
| August | 26,037 | 4,743 | 30,780 |
| September | 27,189 | 5,661 | 32,850 |
| October | 33,365 | 6,850 | 40,215 |
| November | 37,960 | 9,223 | 47,183 |
| December | 41,173 | 12,023 | 53,196 |
| January, 1922 | 42,130 | 10,933 | 53,063 |
| February | 46,827 | 11,387 | 58,214 |
| March | 53,547 | 12,128 | 65,675 |
| April | 56,930 | 12,140 | 69,070 |
| May | 60,619 | 13,790 | 74,409 |
| June | 62,534 | 16,167 | 78,701 |
| July | 62,321 | 15,100 | 77,421 |

The figures for daily average production, beginning with January, 1916, are as follows:

*Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1916—Gross Tons*

| | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|---|---|
| Jan. | 102,746 | 101,643 | 77,799 | 106,525 | 97,264 | 77,945 | 53,063 |
| Feb. | 106,456 | 94,473 | 82,835 | 105,006 | 102,720 | 69,187 | 58,214 |
| Mar. | 107,667 | 104,882 | 103,648 | 99,685 | 108,900 | 51,468 | 65,675 |
| Apr. | 107,592 | 111,165 | 109,607 | 82,607 | 91,327 | 39,768 | 69,070 |
| May | 108,422 | 110,238 | 111,175 | 68,002 | 96,312 | 39,394 | 74,409 |
| June | 107,053 | 109,002 | 110,793 | 70,495 | 101,451 | 35,494 | 78,701 |
| July | 104,017 | 107,829 | 110,354 | 78,310 | 98,931 | 27,889 | 77,421 |
| Aug. | 103,346 | 104,772 | 109,341 | 88,496 | 101,529 | 30,780 | ..... |
| Sept. | 106,745 | 104,465 | 113,942 | 82,932 | 104,310 | 32,850 | ..... |
| Oct. | 113,189 | 106,550 | 112,482 | 60,115 | 106,212 | 40,215 | ..... |
| Nov. | 110,394 | 106,859 | 111,802 | 79,745 | 97,830 | 47,183 | ..... |
| Dec. | 102,537 | 92,997 | 110,762 | 84,944 | 87,222 | 53,196 | ..... |

### Diagram of Pig Iron Production and Prices

The fluctuations in pig iron production from 1913 to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of daily average production by months of coke and anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnaces in Chicago, and No. 2X at Philadelphia. They are based on the weekly quotations of THE IRON AGE.

*Production of Coke and Anthracite Pig Iron in the United States by Months, Beginning Jan. 1, 1918—Gross Tons*

| | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|
| Jan. | 2,411,768 | 3,302,260 | 3,015,181 | 2,416,292 | 1,644,951 |
| Feb. | 2,319,299 | 2,940,168 | 2,978,879 | 1,937,257 | 1,629,991 |
| Mar. | 3,213,091 | 3,090,243 | 3,375,907 | 1,595,522 | 2,035,920 |
| Apr. | 3,288,211 | 2,478,218 | 2,739,797 | 1,193,041 | 2,072,114 |
| May | 3,446,412 | 2,108,056 | 2,985,682 | 1,221,221 | 2,306,679 |
| June | 3,323,791 | 2,114,863 | 3,043,540 | 1,064,833 | 2,361,028 |
| ½ year. | 18,002,572 | 16,033,808 | 18,138,986 | 9,428,166 | 12,050,683 |
| July | 3,420,988 | 2,428,541 | 3,067,043 | 864,555 | 2,400,045 |
| Aug. | 3,389,585 | 2,743,388 | 3,147,402 | 954,193 | ..... |
| Sept. | 3,418,270 | 2,487,965 | 3,129,323 | 985,529 | ..... |
| Oct. | 3,486,941 | 1,863,558 | 3,292,597 | 1,246,676 | ..... |
| Nov. | 3,354,074 | 2,392,350 | 2,934,908 | 1,415,481 | ..... |
| Dec. | 3,433,617 | 2,633,268 | 2,703,855 | 1,649,086 | ..... |
| Ttl. yr. | *38,506,047 | 30,582,878 | 36,414,114 | 16,543,686 | ..... |

*These totals do not include charcoal pig iron. The 1921 production of this iron was 94,730 tons.

### Production of Steel Companies—Gross Tons

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies, as well as from merchant furnaces producing ferromanganese and spiegeleisen, show the following totals of steel making iron, month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

*Production of Steel Companies—Gross Tons*

| | Total Production | | | Spiegeleisen and Ferromanganese | | |
|---|---|---|---|---|---|---|
| | 1920 | 1921 | 1922 | 1920 | 1921 | 1922 |
| Jan. | 2,232,455 | 1,932,159 | 1,306,045 | 23,957 | 22,228 | 6,874 |
| Feb. | 2,181,679 | 1,625,695 | 1,311,170 | 28,038 | 29,013 | 8,540 |
| Mar. | 2,480,668 | 1,323,443 | 1,629,982 | 35,275 | 41,294 | 13,695 |
| Apr. | 1,968,542 | 1,015,621 | 1,707,902 | 27,628 | 24,310 | 19,209 |
| May | 2,128,720 | 1,024,678 | 1,879,180 | 33,407 | 9,232 | 20,334 |
| June | 2,209,770 | 883,312 | 1,876,033 | 34,751 | 4,536 | 22,030 |
| July | 2,230,567 | 715,664 | 1,931,957 | 36,789 | 5,524 | 26,059 |
| Aug. | 2,254,943 | 807,144 | ..... | 36,985 | 3,878 | ..... |
| Sept. | 2,247,250 | 815,692 | ..... | 39,546 | 3,289 | ..... |
| Oct. | 2,393,644 | 1,034,312 | ..... | 34,786 | 3,902 | ..... |
| Nov. | 2,150,075 | 1,138,789 | ..... | 26,944 | 3,525 | ..... |
| Dec. | 2,047,167 | 1,276,381 | ..... | 28,023 | 3,953 | ..... |

### Output by Districts

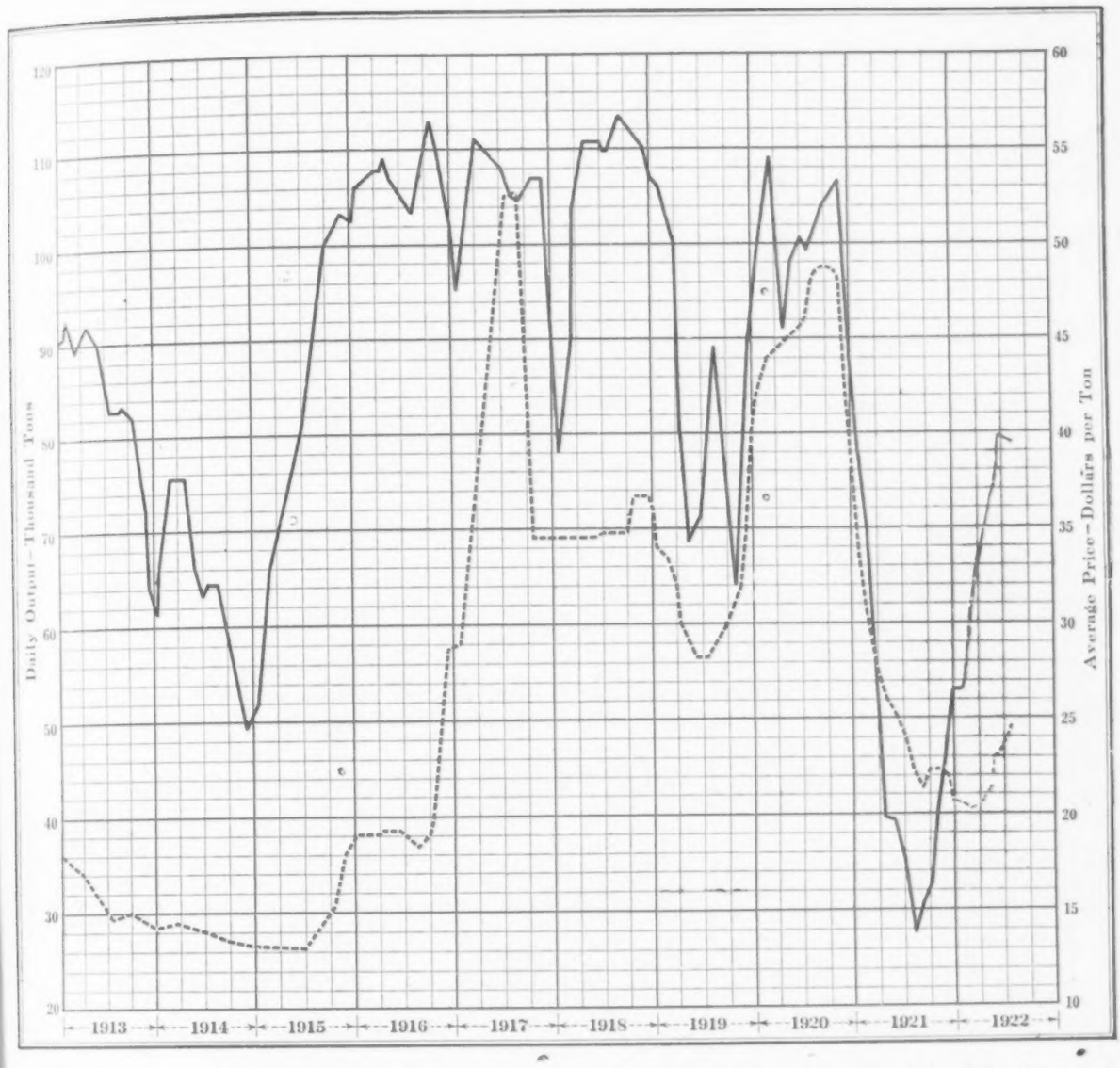
The accompanying table gives the production of all coke and anthracite furnaces for July and the three months preceding:

*Pig Iron Production by Districts, Gross Tons*

| | July (31 days) | June (30 days) | May (31 days) | April (30 days) |
|---|---|---|---|---|
| New York | 145,831 | 148,115 | 150,141 | 131,092 |
| New Jersey | 10,745 | 10,725 | 5,636 | 4,815 |
| Lehigh Valley | 58,070 | 66,967 | 66,572 | 45,714 |
| Schuylkill Valley | 54,660 | 60,925 | 66,669 | 58,927 |
| Lower Susquehanna and Lebanon Valleys | 26,689 | 26,501 | 21,313 | 17,387 |
| Pittsburgh district | 493,963 | 485,401 | 479,106 | 473,584 |
| Shenango Valley | 99,335 | 87,156 | 79,145 | 63,940 |
| Western Penna. | 82,294 | 91,494 | 103,072 | 106,430 |
| Maryland, Virginia and Kentucky | 55,984 | 54,687 | 47,862 | 26,463 |
| Wheeling district | 65,735 | 74,710 | 66,148 | 54,459 |
| Mahoning Valley | 233,093 | 240,470 | 227,053 | 197,113 |
| Central and Northern Ohio | 261,941 | 236,374 | 218,547 | 197,593 |
| Southern Ohio | 29,517 | 30,272 | 29,311 | 27,165 |
| Illinois and Indiana | 472,179 | 454,937 | 459,631 | 427,427 |
| Mich., Minn., Mo., Wis. and Colo. | 101,616 | 93,723 | 89,147 | 67,360 |
| Alabama | 195,910 | 189,101 | 196,104 | 171,852 |
| Tennessee | 12,483 | 9,470 | 1,222 | 828 |
| Total | 2,400,045 | 2,361,028 | 2,306,679 | 2,072,114 |

Among the furnaces blown in during July were the following: No. 1 Swede furnace in the Schuylkill Valley; No. 1 Ashland furnace in Kentucky; Nos. 1 and 4 Bessemer furnaces of the Tennessee Coal, Iron & Railroad Co. in Alabama and the Rockdale furnace in Tennessee.

Among the furnaces blown out or banked during July were the following: One furnace of the Lacka-




The Full Line Represents the Daily Production of Pig Iron and the Dotted Line Is the Average of the Price Per Ton of No. 2 Southern Pig Iron at Cincinnati, Local No. 2 Iron at Chicago and No. 2X Iron at Philadelphia

wanna Steel Co. and one furnace of the Donner Steel Co. in the Buffalo district; two furnaces of the Bethlehem Steel Co. in the Lehigh Valley; one Warwick and one Worth furnace in the Schuylkill Valley; one furnace of the Bethlehem Steel Co. at Steelton in the lower Susquehanna Valley; one Isabella and one Lucy furnace of the Carnegie Steel Co. in the Pittsburgh district; one Shenango furnace in the Shenango Valley; one furnace of the Bethlehem Steel Co. in Maryland; one La Belle furnace in the Wheeling district; one Ohio furnace of the Carnegie Steel Co., the Todd and Jeanette furnaces of the Brier Hill Steel Co., Nos. 2 and 4 Haselton furnaces of the Republic Iron & Steel Co., one furnace of the Youngstown Sheet & Tube Co. and the Trumbull-Cliffs furnace in the Mahoning Valley; one River furnace in northern Ohio; the Belfont and Milton furnaces in southern Ohio; Nos. 3 and 6 South Chicago (new) furnaces of the Illinois Steel Co. and Nos. 1 and 2 Gary furnaces in the Chicago district.

## Blast Furnace Notes

The Temple furnace, Temple, Pa., idle since November, 1920, has been under repair recently and is ready to be put in operation in the near future. J. J. Becker is superintendent.

Norton furnace at Ashland is expected to go out any minute. The American Rolling Mill furnace at Ashland is still operating, and will likely be able to continue for at least a week. It looks now as though the Whitaker-Glessner at Portsmouth and the Columbus furnace of the American Rolling Mill Co. will be the only ones in blast at the end of another week.

## Negotiations Proceeding Over Scrap Supplies in South America

The recently reported purchase of a large tonnage of iron and steel scrap located at various points on the west coast of South America, with which purchase Hyman Ehrlich, 233 Broadway, New York, is identified, is said to amount to as much as 260,000 tons. The Hyman Michaels Co., Chicago, is understood to be interested in the negotiations to an amount of 65,000 tons. So far it is stated that about 61,000 tons has been contracted for, 25,000 tons of heavy melting steel for the Bethlehem Steel Co. at Sparrows Point, Md., and 2500 tons of old iron rails to the same company for delivery to Lebanon. An additional tonnage of the rails is under option with Bethlehem, according to Mr. Ehrlich. The material includes also about 35,000 tons of cast iron car wheels, 21,000 tons of axles, and about 90,000 tons of unspecified material.

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The Nautical Instrument Mfg. Co., Inc., 82 Beaver Street, New York, is in the market for molds and dies for making combination celluloid and metal instruments.

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The Vitrified Wheel Co., Westfield, Mass., has returned to a 9-hr. day, as compared with an 8-hr. day heretofore.

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The open hearth furnace development of the Otis Steel Co. at Cleveland provided one of the notable items in the fabricated steel market of the week.

# Iron and Steel Markets

## FURTHER CURTAILMENT

### Fuel Situation Steadily Growing More Serious

### Net Loss of 21 Blast Furnaces with Other Shutdowns Coming—Railroad Buying Still the Feature

The week has brought a further tightening of the grip of the coal and railroad strikes upon iron and steel works. It is realized that the situation will grow worse before it is better and that it has in it more serious possibilities than producers have yet entertained.

Pig iron production figures for July show how well the industry was maintaining itself, in spite of the railroad strike, until the priorities order became effective. After six months of steadily increasing output, July brought a net loss of 21 furnaces. However, the large majority of these blew out in the last week of the month.

In the 31 days of July production was 2,400,045 tons, or 77,421 tons per day, against 2,361,028 tons for the 30 days of June, or 78,701 tons per day. Merchant furnaces were hit hardest, their loss being nearly 1100 tons per day, while steel works furnaces held nearly up to the June rate.

The 171 furnaces in blast Aug. 1 had a capacity of about 68,000 tons per day, as against 81,845 tons per day for 192 furnaces on July 1. Since July ended other furnaces have been compelled to bank and with still others the uncertainties of getting coke are likely soon to be the certainty of not getting it.

This week the Steel Corporation has ordered the banking of two Carrie furnaces in the Pittsburgh district and of one Gary and one Joliet furnace in the Chicago district. In the Pittsburgh and adjoining districts nine furnaces have been thrown idle in the past week.

Steel works operations, owing to the large use of scrap, have not suffered in proportion to the falling off in pig iron. The Steel Corporation entered this week with steel output at nearly 70 per cent, but this is not likely to be maintained—and the average for independent steel companies has been nearer 60. Further reductions are impending in the Youngstown district.

In view of the enforcement of priority orders on coal shipments, a number of steel companies having stocks on hand are conserving their supply by slowing down steel works operation. A slight increase in Connellsville coke production is reported and some improvement in shipments of Kentucky and West Virginia coal.

Throughout the trade the view prevails that even with an early settlement of the two strikes, steel producers will not be greatly helped. Railroads and public utilities will be served first. Thus far few coal producers have regarded an order from the Pennsylvania Railroad calling for 20 per cent of their production.

The control of coal shipments has not gone yet to the point of holding prices in bounds. Some steel companies have paid as high as $10 for producer gas coal. Connellsville foundry coke has sold up to $17 and in most districts blast furnace coke is unobtainable at any price.

Already a good many consumers are taking less steel because fuel scarcity has cut down their operations, but others who have fuel are offering premiums for steel. Thus on a small scale the situation of the first half of 1920 is repeated and there is evidence of duplicate ordering to insure getting material. Prices in some cases have gone to 2c., Pittsburgh, and higher for bars and plates.

Railroad buying is still the strong feature of the situation. Several thousand additional cars are added to the list of repair orders. In locomotives the New York Central contract for 150 is conspicuous.

The persistence of structural business is another factor, and there is surprise at the continued buying in other lines, including automobile manufacture in spite of the accumulating difficulties in all industries.

The Pennsylvania Railroad has bought about 5000 tons more of steel, principally plates, for car repair work, making 17,000 tons it has taken for this purpose in two or three weeks.

In export trade several rail inquiries are up, including 8000 tons for Bolivia, 10,000 tons for Siam and 3000 tons for the Cuba Cane Co. London reports a 7000-ton rail order taken by the United States in competition with British makers.

Pig iron markets show further advances in prices, with only moderate inquiry, producers having little iron to offer in view of the curtailment of coke supply. At Chicago foundry and malleable irons are $1 higher and Lake Superior charcoal iron has advanced $1.50 per ton. In the Central West the advance on foundry iron is in some cases $2 per ton in the week. Foreign irons are still coming in at Atlantic ports to help out the Eastern market. Probably 30,000 to 35,000 tons has been sold here or sent over since the movement began in May.

In spite of the difficulty in getting coal, lake vessel owners expect to move all the Lake Superior ore the furnaces can take this month.

## Pittsburgh

### Sharp Curtailment of Operations with Mounting Prices on Little Buying

PITTSBURGH, Aug. 1.—The iron and steel industry still is paying a heavy toll to the coal and railroad strikes. In the past week no less than six blast furnaces have been forced into idleness by the shortage of fuel in this and adjacent districts. Late last week the Brier Hill Steel Co. put down one stack, while yesterday the Carnegie Steel Co. blew out one Lucy furnace and the Jones & Laughlin Steel Co. had to stop the operation of one Eliza furnace as well as one battery of its by-product plant at its south side works. The Youngstown Sheet & Tube Co. last Saturday put off a furnace and at Johnstown, Pa., the Cambria Steel Co. now has only three active furnaces as compared with five recently.

In the Mahoning and Shenango Valleys only six furnaces now are making iron, and it is probable that

# A Comparison of Prices

**Advances Over the Previous Week in Heavy Type, Declines in Italics**

At date, one week, one month, and one year previous

## For Early Delivery

| Pig Iron, Per Gross Ton: | Aug. 1, 1922 | July 25, 1922 | July 3, 1922 | Aug. 2, 1921 |
|---|---|---|---|---|
| No. 2X, Philadelphia‡ | **$29.76** | $28.77 | $27.64 | $21.35 |
| No. 2, Valley furnace† | **28.00** | 25.00 | 24.00 | 19.50 |
| No. 2, Southern, Cin'ti† | 22.55 | 22.55 | 22.55 | 23.50 |
| No. 2, Birmingham, Ala.† | 18.50 | 18.50 | 18.50 | 19.00 |
| No. 2, foundry, Chicago* | **26.00** | 25.00 | 24.00 | 18.00 |
| Basic, del'd, eastern Pa. | **27.25** | 25.75 | 25.75 | 21.25 |
| Basic, Valley furnace | **25.00** | 24.00 | 25.00 | 18.00 |
| Valley Bess., del. Pitts. | 26.76 | 26.76 | 26.76 | 21.96 |
| Malleable, Chicago* | **26.00** | 25.00 | 24.00 | 18.50 |
| Malleable, Valley | 27.00 | 27.00 | 24.50 | 20.00 |
| Gray forge, Pittsburgh | **27.76** | 26.26 | 25.26 | 21.46 |
| L. S. charcoal, Chicago | **33.15** | 31.65 | 31.65 | 35.00 |
| Ferromanganese, seaboard | 67.50 | 67.50 | 67.50 | 70.00 |

| Rails, Billets, etc., Per Gross Ton: | | | | |
|---|---|---|---|---|
| O-h. rails, heavy, at mill | $40.00 | $40.00 | $40.00 | $47.00 |
| Bess. billets, Pittsburgh | 35.00 | 35.00 | 35.00 | 30.00 |
| O-h. billets, Pittsburgh | 35.00 | 35.00 | 35.00 | 30.00 |
| O-h. sheet bars, P'gh. | 35.00 | 35.00 | 35.00 | 32.00 |
| Forging billets, base, P'gh. | 40.00 | 40.00 | 40.00 | 35.00 |
| O-h. billets, Phila. | 40.17 | 40.17 | 40.17 | 35.74 |
| Wire rods, Pittsburgh | 40.00 | 40.00 | 40.00 | 42.00 |
| | Cents | Cents | Cents | Cents |
| Skelp, gr. steel, P'gh, lb. | 1.70 | 1.70 | 1.70 | 1.85 |
| Light rails at mill | 1.75 | 1.75 | 1.70 | 1.85 |

| Finished Iron and Steel, *Per Lb. to Large Buyers:* | Cents | Cents | Cents | Cents |
|---|---|---|---|---|
| Iron bars, Philadelphia | **2.025** | 1.925 | 1.925 | 2.10 |
| Iron bars, Chicago | 2.00 | 2.00 | 1.80 | 1.75 |
| Steel bars, Pittsburgh | 1.70 | 1.70 | 1.70 | 1.75 |
| Steel bars, Chicago | 1.75 | 1.75 | 1.75 | 2.13 |
| Steel bars, New York | 2.04 | 2.04 | 2.04 | 2.13 |
| Tank plates, Pittsburgh | 1.70 | 1.70 | 1.70 | 1.80 |
| Tank plates, Chicago | 1.75 | 1.75 | 1.75 | 2.18 |
| Tank plates, New York | 2.04 | 2.04 | 2.04 | 2.18 |
| Beams, Pittsburgh | 1.70 | 1.70 | 1.70 | 1.85 |
| Beams, Chicago | 1.75 | 1.75 | 1.75 | 2.23 |
| Beams, New York | 2.04 | 2.04 | 2.04 | 2.23 |
| Steel hoops, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.40 |

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

| Sheets, Nails and Wire, *Per Lb. to Large Buyers:* | Aug. 1, 1922 Cents | July 25, 1922 Cents | July 3, 1922 Cents | Aug. 2, 1921 Cents |
|---|---|---|---|---|
| Sheets, black, No. 28, P'gh | 3.15 | 3.15 | 3.15 | 3.00 |
| Sheets, galv, No. 28, P'gh | 4.15 | 4.15 | 4.15 | 4.00 |
| Sheets, blue an'l'd, 9 & 10 | 2.40 | 2.40 | 2.40 | 2.40 |
| Wire nails, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.75 |
| Plain wire, Pittsburgh | 2.25 | 2.25 | 2.25 | 2.50 |
| Barbed wire, galv., P'gh | 3.05 | 3.05 | 3.05 | 3.40 |
| Tin plate, 100-lb. box, P'gh | $4.75 | $4.75 | $4.75 | $5.25 |

| Old Material, Per Gross Ton: | | | | |
|---|---|---|---|---|
| Carwheels, Chicago | $19.50 | $19.50 | $18.50 | $12.50 |
| Carwheels, Philadelphia | 17.50 | 17.50 | 17.50 | 16.00 |
| Heavy steel scrap, P'gh | *17.00* | 17.25 | 17.50 | 12.00 |
| Heavy steel scrap, Phila. | 15.00 | 15.00 | 15.00 | 11.00 |
| Heavy steel scrap, Chicago | 15.50 | 15.50 | 15.00 | 10.00 |
| No. 1 cast, Pittsburgh | 19.00 | 19.00 | 19.00 | 16.00 |
| No. 1 cast, Philadelphia | **18.00** | 17.50 | 17.50 | 17.00 |
| No. 1 cast, Ch'go (net ton) | 17.00 | 17.00 | 17.00 | 11.50 |
| No. 1 RR. wrot, Phila. | 17.50 | 17.50 | 17.00 | 14.00 |
| No. 1 RR. wrot, Ch'go (net) | **14.25** | 14.00 | 13.50 | 9.25 |

| Coke, Connellsville, Per Net Ton at Oven: | | | | |
|---|---|---|---|---|
| Furnace coke, prompt | $14.00 | $14.00 | $8.50 | $2.75 |
| Foundry coke, prompt | **14.50** | 14.00 | 9.00 | 3.75 |

| Metals, *Per Lb. to Large Buyers:* | Cents | Cents | Cents | Cents |
|---|---|---|---|---|
| Lake copper, New York | **14.12½** | 14.00 | 13.75 | 12.00 |
| Electrolytic copper, N. Y. | 13.75 | 13.75 | 13.50 | 11.75 |
| Zinc, St. Louis | **6.25** | 5.95 | 5.35 | 4.20 |
| Zinc, New York | **6.60** | 6.30 | 5.70 | 4.70 |
| Lead, St. Louis | **5.47½** | 5.40 | 5.55 | 4.20 |
| Lead, New York | **5.80** | 5.75 | 5.75 | 4.40 |
| Tin (Straits), New York | **32.75** | 32.12½ | ... | 26.50 |
| Antimony (Asiatic), N. Y. | 5.25 | 5.25 | 5.00 | 4.60 |

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

### Composite Price, Aug. 1, 1922, Finished Steel, 2.169c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 88 per cent of the United States output of finished steel

| | |
|---|---|
| July 25, 1922, | 2.169c. |
| July 3, 1922, | 2.169c. |
| Aug. 2, 1921, | 2.364c. |
| 10-year pre-war average, | 1.689c. |

### Composite Price, Aug. 1, 1922, Pig Iron, $24.38 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

| | |
|---|---|
| July 25, 1922, | $24.05 |
| July 3, 1922, | 24.19 |
| Aug. 2, 1921, | 18.81 |
| 10-year pre-war average, | 15.72 |

this number will be further reduced before the end of the week. Of the 140 furnaces located in the triangle formed by Johnstown, Wheeling and Warren (Ohio) only 62 now are active, a loss of 15 from the recent peak of the furnaces now active. It is believed that the Hanna stack at Dover, Ohio; that of the Sharon Steel Hoop Co., Lowellville, Ohio, and one of the three of the Youngstown Sheet & Tube Co. soon will suspend.

Steel plant operations also are on a lighter scale. The American Sheet & Tin Plate Co. is operating at about 60 per cent, taking in both sheet and tin plate mills, and while the Carnegie Steel Co. last week averaged about 75 per cent operations, the expectation is that this week's rate will be much lower. Shortage of coal also is affecting other Steel Corporation subsidiaries here. The Jones & Laughlin Steel Co. and the Pittsburgh Steel Co. are at about a 60 per cent operation and the Pittsburgh Crucible Steel Co. somewhat below 50 per cent.

Pittsburgh is not much encouraged that an early settlement of the railroad and coal strikes will help the steel industry materially, because of the preference which railroads and public utilities and domestic requirements will have over the steel industry for some time to come. Right in Pittsburgh those steel plants which draw coal supplies by river would be helped by a settlement of the coal strike, since river transportation is unaffected by the priority system.

There is much confusion on account of the application of coal priorities, particularly on intrastate shipments, because control is left with the State public service commissions, and coal producers believe that these commissions lack authority to direct railroad operations. Few of the coal producers are inclined to honor an order recently made by the Pennsylvania Railroad demanding 20 per cent of the production. They feel that the railroad has no authority to make such a demand, and while the Pennsylvania Railroad can confiscate the coal the producers are refraining from consigning it to that road.

With the slowing down in steel plant activities, there also has come a falling away in the demand for steel. Consumers evidently expect to be in no better shape than the producers with regard to fuel supplies. Further advances have taken place in pig iron prices,

notably in special analysis iron, due to the fact that while the demand is far from active, there are more buyers than sellers and more demand than supply. No. 2 foundry iron now does not seem to be available at less than $28, Valley furnace, as against $25 a week ago, and an advance of $1 per ton has been established in basic iron on one or two good-sized sales.

Coal is slightly easier under a smaller demand, but fancy prices continue to be paid for the limited tonnages of coke that are coming on the market. Old material is slow and prices show a softer tendency.

**Pig Iron.**—Founders and other users of special analysis iron appear to be suffering less from the fuel shortage than are the steel companies, and as there continues to be a good demand from those sources, and production and available supplies are very limited, prices still are mounting. All of the merchant Valley furnace interests are out of the market and the only iron of foundry grade now offered is from a Cleveland furnace, which is quoting $28, Valley furnace, for No. 2 grade. This interest has made sales during the week at $26 and $27 and claims to have obtained $28 within the last two days. The most recent sale of gray forge iron was at $26, Valley furnace basis, but it is doubtful if any of this grade now could be had for less than $27. Similarly malleable iron is quoted at $27, Valley furnace, that being the basis of the most recent business, but fresh inquiries might be hard to cover at less than $28. Two sales of basic, one of 2000 and another of 3000 tons, have been made at $25, Valley furnace, thus setting the market at that figure. There is doubt, however, that more of that grade can be had that low. The Monongahela Iron & Steel Co., Paden City, W. Va., which is seeking a round tonnage of Bessemer iron for August, September and October delivery, has been quoted $26, Valley furnace, but claims ability to buy at $25. In the absence of sales this grade is quoted at the former price, $25. W. P. Snyder & Co. makes the average price of basic iron from Valley furnaces in July $24.56 and of Bessemer $25. June averages were $25 for both grades.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

| | |
|---|---|
| Basic | $25.00 |
| Bessemer | 25.00 |
| Gray forge | $26.00 to 27.00 |
| No. 2 foundry | 28.00 |
| No. 3 foundry | 26.00 to 27.00 |
| Malleable | 27.00 to 28.00 |

**Ferroalloys.**—Business still is virtually at a standstill because of the uncertainty of continued steel plant operation, due to the fuel situation. Prices are unchanged. Practically no domestic ferromanganese is being offered at present and quotations are nominal. The British product, which is arriving in this country freely on orders placed 60 days ago, still is quotable at $67.50, c.i.f. Atlantic seaboard, for September delivery, but on spot tonnages the common quotation is $72.50. We note one inquiry for 100 tons of 20 per cent spiegeleisen for immediate delivery from a Pittsburgh district steel maker. This material still is quoted at $36 furnace for 20 per cent and $35 furnace for 16 to 19 per cent by the leading commercial producer, but this interest is committed on probable production over the remainder of the year.

We quote 78 to 82 per cent ferromanganese, $67.50 c.i.f. Atlantic seaboard for domestic; British, spot, $72.50; British, future, $67.50; German, 76 to 80 per cent, $66. Average 20 per cent spiegeleisen, $36 furnace; 16 to 19 per cent, $35 furnace; 50 per cent ferrosilicon, domestic, $55 to $60 furnace, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson and New Straitsville, Ohio, furnaces as follows: 10 per cent, $41.50; 11 per cent, $44.80; 12 per cent, $48.10; 13 per cent, $52.10; 14 per cent, $55.10; silvery iron, 6 per cent, $30; 7 per cent, $31; 8 per cent, $32.50; 9 per cent, $34.50; 10 per cent, $36.50; 11 per cent, $39; 12 per cent, $40.50. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is $4.06 per gross ton.

**Iron and Steel Bars.**—On account of the restrictions to steel production caused by the fuel situation, there is no easing in the bar supply situation and prices are very firm within the quoted range. The Jones & Laughlin Steel Co. still is taking some tonnage at 1.70c. base, Pittsburgh, and that is the price also of the Steel Corporation, but for indefinite delivery. Most of the other independent makers are out of the market. Iron bars are up $1 per ton to 2.25c., base, for refined bars in carload lots.

We quote steel bars rolled from billets at 1.70c. to 1.80c.; reinforcing bars, rolled from billets, 1.70c. to 1.80c. base; rail steel reinforcing bars, 1.60c. to 1.70c.; refined iron bars, 2.25c. in car loads, f.o.b. mill, Pittsburgh.

**Wire Products.**—Although the demand often before has been greater, all makers are falling behind in their deliveries, because of the restrictions to steel production caused by the fuel situation. The Steel Corporation is more heavily committed than are the independents and naturally it is making the poorest showing with regard to deliveries. Prices higher than those named by the leading interest do not find much basis in sales. The full range of prices is given on page 315.

**Cold-Finished Steel Bars and Shafting.**—The effort to establish a minimum of 2.25c. base, Pittsburgh, so far has not been successful, despite the increasing difficulties which makers are having in getting hot-rolled bars promptly, because demands are not sufficiently heavy or urgent. Consumers generally are disposed to wait on deliveries on contracts on which prices are much below even the present minimum of 2.10c. Ground shafting is firm and unchanged at 2.50c. base, mill, for carloads and 2.75c. for less than carloads.

**Rivets.**—The recent advance of $5 per ton has not in any way lessened the demand, which is still reported to be heavy, due to the fact that so much structural work is in progress, while railroad equipment manufacturers are extremely busy. The automotive industry as yet has shown no appreciable slowing up and this fact largely accounts for the continued heavy demand for small rivets. The new quotations are well observed on new business. They are to be found on page 315.

**Billets, Sheet Bars and Slabs.**—Since the finishing mills are suffering quite as much as the steel works from the coal shortage and the introduction of the priority system means that there can be no immediate improvement in the fuel supply situation, business in semi-finished steel has become exceedingly quiet in the past week. Buyers are not anxious for supplies and producers are not anxious for business. Prices are nominal, but $35 is regarded as a fair appraisal of today's value of sheet bars, slabs and large billets. Steel works operations are holding up better in Pittsburgh than in some of the nearby districts.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at $35; 2 x 2-in. billets, $35; Bessemer and open-hearth sheet bars, $35; slabs, $35; forging billets, ordinary carbons, $40, all f.o.b. Youngstown or Pittsburgh mills.

**Iron and Steel Pipe.**—Demand for the smaller sizes of standard pipe finding their heaviest use in building construction still is on a tremendous scale and obligations of most producers are so heavy that they are obliged to restrict new bookings. Some have adopted the plan of taking on new business to the extent only of what can be supplied from stock or fitted in with existing mill schedules. Butt weld capacity is estimated to be engaged 90 days ahead. There is a good business in lap welded sizes, but most producers are able to promise deliveries in four to five weeks. There continues to be much talk of a possible advance in steel pipe on the ground that the rise in this product has been only about half that in other finished steel lines, but as yet no definite steps looking toward higher prices have been taken. Discounts are given on page 315.

**Hot-Rolled Flats.**—New demands, if anything, are lighter than they have been but makers are heavily committed and consumers are specifying freely. The market is firm at 2.50c., base, Pittsburgh, for hoops, bands and hot-rolled strips, with now and then some sales carrying prompt delivery assurances as high as 2.75c. Some mills failed to complete rollings of cotton ties in advance of the opening of the season and having orders to get out are turning down inquiries for narrow, light-gage stock. The August price for cotton ties is $1.11 per bundle of 45 lb., this being the established price of $1.10, plus the carrying charge of 1c. per bundle per month.

**Plates.**—It is still easier for buyers to interest the mills in plates than in any of the other heavier products. Not much railroad business has lately come into this market, but considerable new tank business for Wyoming and Oklahoma has been placed with local builders. One order for Wyoming calls for 25 80,000-bbl. tanks, involving about 7500 tons of steel, while a recent order for 12 tanks of similar capacity for the Oklahoma field will take about 3500 tons of steel. Prices are firm within the recent range. Quotations are given on page 315.

**Tin Plate.**—Canning crops not only are abundant this year but matured earlier than usual and miscalculation as to requirements of tin plate has caused the container manufacturers to seek additional tonnages. This demand, coming at a time when maintenance of mill operations has been impossible owing to the fuel shortage, the situation in regard to supplies is tight. Prices are unchanged but may be said to be firm.

**Cold-Rolled Strips.**—Makers are not very anxious for additional business as their present obligations are sufficient to carry them through the present quarter, and there is a possibility that there may be a carryover into the fourth quarter, in view of the restrictive influence of the coal strike situation upon steel production. The market still is quotable at 4c., base, Pittsburgh, but premiums of as much as $5 per ton over this price have been paid for small tonnages for early delivery.

**Sheets.**—Demand has not decreased quite as much as that for some other finished lines and actually is still brisk from the automotive industry and with the mills obliged to curtail operations on account of the fuel shortage. The supply situation is really acute. Premiums for prompt shipments are much more common than they were recently. Prices are given on page 315.

**Steel Skelp.**—The market is quiet as far as actual sales are concerned, but this is due to the meagerness of available supplies rather than a lack of demand. Grooved skelp is wanted on account of a high demand for the smaller sizes of pipe and is quotable as high as 2c.; on sheared skelp the range is from 1.70c. to 1.80c.

**Wire Rods.**—On a few small tonnages, urgently wanted, as high as $45 is reported to have been done and one large independent producer, who for some time has been quoting $43 on sizable lots, continues to hold to that price. Most of the tonnage moving carries a price of $40 for the base size of soft rods, but that figure now is not interesting to independent makers on fresh inquiries.

We quote No. 5 common basic or Bessemer rods to domestic consumers, $40 to $43; chain rods, $40 to $43; screw stock rods, $45 to $48; rivet and bolt rods and other rods of that character, $40 to $43; high carbon rods, $47 to $53, depending on carbon, per gross ton, f.o.b. Pittsburgh or Youngstown.

**Steel Rails.**—There is a fair amount of current business in light rails, and since those that are wanted must be shipped out immediately, some of the mills are getting as high as 2c. out of stock. The regular mill base, however, is unchanged at 1.75c., base, for those sections rolled from new steel.

We quote 25 to 45-lb. sections, rolled from new steel, 1.75c. base; rolled from old rails, 1.60c. to 1.65c. base; standard rails, $10 per gross ton mill for Bessemer and open-hearth sections.

**Structural Material.**—Fabricating interests here report increased difficulty in securing deliveries of plain material, and some of them are unable to quote against current projects because of their inability to make deliveries within the specified time. Stronger prices are indicated in recent bids on new structural jobs, but the complaint still is heard that fabricated steel has not advanced in keeping with plain material. Prices are given on page 315.

**Spikes.**—Railroads tributary to this city appear to be well covered against their immediate requirements of spikes and other track equipment and new inquiries are few and small. There is no change in prices. Quotations are given on page 315.

**Nuts and Bolts.**—Buyers entered heavy orders for third quarter delivery prior to an advance which became effective July 1, and while specifications are coming in freely strictly new business is of very moderate proportions. Discounts are given on page 315.

**Coke and Coal.**—Coal prices have declined about $1 per ton since a week ago, the range now being $7 to $7.50 as against $8 to $8.50 recently. Available supplies are no larger, but the feeling that when the Government plans really become operative, prices will be more reasonable, has led to the withdrawal of a good many buyers from the market. The few lots of Beehive oven coke reaching the market are selling at $14 to $14.50 for furnace grade and at $14.50 to $15.00 for foundry coke.

**Old Material.**—If there is a definite tendency to prices, it is toward lower levels, due to the fact that a large majority of consumers in this district are out of the market on account of the uncertainty about fuel supplies. Some mills are holding up shipments against contracts, and it is the reconsigning of these tonnages that tends to weaken prices. General offerings of old material are moderate and the market is not likely to be flooded by railroad scrap right away, since on account of the shortage of coal the railroads are unlikely to give early attention to the collection and loading of road scrap, while production is likely to be affected so long as the strike of the shopmen continues. On the basis of recent transactions, including a purchase of about 12,000 tons by a large independent steel company, the market on heavy melting steel is quotable from $17 to $17.50. The market is slightly stronger on old rails for rolling, but rules a shade easier on most kinds of cast scrap and on the blast furnace grades. Bids were opened this morning on about 17,000 tons of scrap offered by the Pennsylvania Railroad, Eastern region.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows per gross ton:

| | |
|---|---|
| Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh | $17.50 to $17.50 |
| No. 1 cast, cupola size | 19.00 to 19.50 |
| Rails for rerolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa. | 17.50 to 18.00 |
| Compressed sheet steel | 16.00 to 16.50 |
| Bundled sheets, sides and ends | 15.00 to 15.50 |
| Railroad knuckles and couplers | 18.00 to 18.50 |
| Railroad coil and leaf springs | 18.00 to 18.50 |
| Low phosphorus standard bloom and billet ends | 20.00 to 20.50 |
| Low phosphorus plates and other grades | 19.00 to 19.50 |
| Railroad malleable | 16.00 to 16.50 |
| Iron car axles | 26.00 to 26.50 |
| Locomotive axles, steel | 25.00 to 25.50 |
| Steel car axles | 17.50 to 18.00 |
| Cast iron wheels | 18.00 to 18.50 |
| Rolled steel wheels | 18.00 to 18.50 |
| Machine shop turnings | 13.75 to 14.25 |
| Sheet bar crop ends | 19.50 to 20.00 |
| Heavy steel axle turnings | 15.00 to 15.50 |
| Short shoveling turnings | 15.00 to 15.50 |
| Heavy breakable cast | 18.00 to 18.50 |
| Stove plate | 14.50 to 15.00 |
| Cast iron borings | 15.50 to 16.00 |
| No. 1 railroad wrought | 15.00 to 15.50 |

## Wholesale Trade in New York in June

The dollar value of June sales of 122 wholesale dealers in the New York Federal Reserve Bank district was about the same as in June of last year. This is the third month this year that sales have been practically equal to those of the corresponding month of 1921. The value of sales during the first half of the present year was 2 per cent below sales for January to June, 1921.

In June for the first time since the fall of 1920, sales of machine tools were larger than in the corresponding month of the preceding year, reflecting increased activity in industrial plants. The larger volume of building is apparent in the sales of hardware dealers, which increased 12 per cent over those of June, 1921.

Grocery dealers report an increase of 7 per cent in June sales, the largest gain recorded this year, and probably due, in a measure, to somewhat higher prices.

# Chicago

## Pig Iron Production Checked More Than Steel—Demand Surprisingly Strong

CHICAGO, Aug. 1.—The coal and railroad strikes have progressed to the point where they are causing both producers and users of iron and steel to curtail operations. Four steel works blast furnaces and one merchant stack have been banked with the certainty that others will become inactive unless fuel becomes more plentiful. Steel output has not declined in proportion to pig iron production, owing to the greater use of scrap in the open hearth furnaces. Notwithstanding the loss of two blast furnaces at Gary and two at South Works, reducing its total active stacks to 16 out of 29, the Illinois Steel Co. is producing steel at the rate of 78 per cent of capacity as against 84 per cent last week. The Inland Steel Co. continues to operate at 65 to 70 per cent of capacity.

In view of the uncertain fuel situation, it was rather surprising that steel demand shows so little change. For a leading local producer, specifications passed to the mills for execution are substantially as heavy as in previous weeks, inquiry is slightly heavier, while new business booked is a little lighter. The explanation seems to lie in the fact that certain important classes of consumers continue to buy steel, despite serious current industrial difficulties. The railroads are still placing large orders for cars and car repairs as well as for track material and are apparently anxious to carry out their program despite the fact that they now realize that these programs cannot be completed this year.

Automobile manufacturers are endeavoring to buy for 60 to 90 days ahead and even further, whereas until recently they adhered to a hand-to-mouth policy of purchasing. Building activity is still flourishing, as evidenced by numerous structural awards and inquiries. There appears to be a feeling among users that the present is a good time to buy, even though deliveries may be distant. This sentiment may be due to the belief that it will take steel producers months to rebuild their fuel stocks, and in the meantime the tendency of prices may continue to be upward.

As against this it is argued in some quarters that in the scurry to get material there has been considerable duplication of both inquiries and orders. Owing to their crippled operations, however, mills are carefully scrutinizing business offered them and in some cases are limiting their new sales to old customers.

**Ferroalloys.**—Ferromanganese por prompt shipment has advanced to a minimum of $75, f.o.b., New Orleans, but still can be bought for late September and October shipment at $67.50. Fifty per cent ferrosilicon is available at $57, delivered, for both spot and future shipment.

We quote 78 to 82 per cent ferromanganese, future, $75.06; prompt, $82.56, delivered; 50 per cent ferrosilicon, $57, delivered; spiegeleisen, 18 to 22 per cent, $46, delivered.

**Pig Iron.**—With an acute scarcity of fuel staring them in the face, local producers have advanced their prices to $28, base, furnace, on spot and a minimum of $26 on contract iron. One dollar extra is charged for each ½ per cent increase in silicon content above the base grade. The Southern furnace, which has been selling at $18.50, base, Birmingham, has withdrawn from the market, so that the present minimum quotation of Southern foundry is $20. Even the latter price is practically nominal, as it is exceedingly difficult to get delivery on the Southern product, because of car shortage. Consignments of Southern iron which have been in transit four and five weeks have not yet reached destination. The policy of buyers at present seems to be one of caution, dictated by uncertainty as to fuel supplies. The principal demand is for spot iron to take care of immediate needs, as an absolute suspension of operation may become necessary if the coal strike is not settled. One of the largest recent sales was 1500 tons of malleable iron to a Wisconsin melter, 500 tons for prompt shipment and the remainder for later delivery. Most orders cover small lots, ranging from a carload up to a few hundred tons. Charcoal iron has advanced to $30, base, furnace.

Quotations on Northern foundry, high phosphorus malleable and basic irons are f.o.b. local furnace and do not include a switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards, or when so indicated, f.o.b. furnace other than local.

| | | |
|---|---|---|
| Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago | | $33.15 |
| Northern coke, No. 1, sil. 2.25 to 2.75 | $27.00 to | 29.00 |
| Northern coke, foundry, No. 2, sil. 1.75 to 2.25 | 26.00 to | 28.00 |
| Northern high phos | 26.00 to | 28.00 |
| Southern No. 2 | | 26.00 |
| Malleable, not over 2.25 sil | 26.00 to | 28.00 |
| Basic | 26.00 to | 28.00 |
| Low phos. Valley furnace, sil. 1 to 2 per cent copper free | 34.00 to | 37.00 |
| Silvery, sil. 8 per cent | | 37.29 |

**Bars.**—Prices on soft steel bars for indefinite delivery are unchanged, but for specific shipment, material is difficult to obtain and quotations are steadily advancing. The minimum price for early shipment in this market appears to be 2.15c., Chicago, while Eastern mills are booking business at 1.85c. to 2c., Pittsburgh. In the opinion of some observers the scurry for bars by users has made the volume of inquiry appear larger than it actually is. Bar iron is firm at a minimum of 2c., Chicago, and one important mill is taking new business only on the basis of prices ruling at the time of shipment. High fuel costs are a source of great concern to these mills and it is intimated that the situation may force one or more producers to suspend operations. The Moline, Ill., rail and steel bar plant of the Republic Iron & Steel Co., started up to-day with a comfortable back log. This mill is quoting 1.65c. to 1.70c., f.o.b Moline, while Chicago Heights rail steel makers are practically out of the market, with nominal quotations of 1.70c. to 1.80c., Chicago. Bar iron, two cents.

Mill prices are: Mild steel bars, 1.75c. to 2.15c., Chicago; common bar iron, 2c., Chicago; rail steel, 1.70c. to 1.80c., mill or Chicago.

Jobbers quote 2.60c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 3.55c. for rounds and 4.05c. for flats, squares and hexagons. Jobbers quote hard and medium deformed steel bars at 2.50c. base; hoops, 3.60c.; bands, 3.35c.

**Bolts and Nuts.**—Some makers continue to accept specifications at the discounts of May 11, but the dominant tendency of the market is toward firmness at the July 1 prices. Demand from farm implement makers is steadily improving and buying by automobile manufacturers is heavy. The latter have abandoned their policy of buying for immediate needs and are now trying to cover for 60 to 90 days ahead. The discounts on page 315 apply in this territory except that they are f.o.b., Chicago, instead of f.o.b., Pittsburgh.

Jobbers quote structural rivets, 3.25c.; boiler rivets, 3.35c.; machine bolts up to ⅞ x 4 in., 50, 10 and 10 per cent off; larger sizes, 50 and 10 off; carriage bolts up to ⅞ x 6 in., 50 and 5 off; larger sizes, 45 off; hot pressed nuts, squares and hexagons, tapped, $3.25 off; blank nuts, $3.50 off; coach or lag screws, gimlet points, square heads, 60 per cent off; quantity extras are unchanged.

**Wire Products.**—Production has been materially curtailed both by shortage of steel and labor. Demand still exceeds the ability of the mills to deliver in all classes of products. It is probable, however, that if mill output were normal, little trouble would be experienced in meeting the needs of consumers. For mill prices see finished iron and steel, f.o.b. Pittsburgh, page 315.

We quote warehouse prices, f.o.b. Chicago: No. 9 and heavier black annealed wire and No. 9 and heavier bright basic wire, $2.95 per 100 lb.; common wire nails, $3.10 per 100 lb.; cement coated nails, $2.60 per keg.

**Sheets.**—There is a healthy demand for blue annealed, while inquiries for galvanized are particularly heavy. Black sheets alone lag. The situation is the reverse of that which obtained early in the year, when sales of black were heavy and the demand for galvanized was slack. The change is explained by the fact that the farmers who are large consumers of galvanized sheet steel products have commenced to buy on a broad scale. Purchases of sheets for corrugated roofing are especially liberal. Sheets for early delivery are difficult to obtain.

Mill quotations are 3.15c. to 3.30c. for No. 28 black, 2.40c. to 2.50c. for No. 10 blue annealed and 4.15c. to 4.30c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote blue annealed, 3.75c.; black, 4.45c.; galvanized, 5.45c.

**Plates.**—The price situation shows little change, but material for early delivery is difficult to obtain. The Illinois Steel Co. continues to quote 1.75c., Chicago, for indefinite delivery, while the Inland Steel Co. is still able to take a limited tonnage of certain sizes of heavy sheared plate for six to nine weeks delivery. Owing to sharp reductions in the operations of Eastern mills, consumers no longer find it easy to secure material for early shipment from points outside the Chicago district. Demand is still flourishing with additional cars and car repairs being placed by the railroads and further inquiry for oil storage tanks. The contract for 25 oil tanks for the Sinclair properties in the Wyoming field is about to be awarded.

The mill quotation is 1.75c. to 2c., Chicago. Jobbers quote 2.75c. for plates out of stock.

**Structural Material.**—Structural lettings for the week have been heavy and new inquiry is large. Plain material for early delivery, however, is difficult to obtain. The Illinois Steel Co. continues to quote 1.75c., Chicago, for indefinite shipment, while the Inland Steel Co. is out of the market except for an occasional size on which it can make from six to nine weeks' delivery. The minimum price for specific delivery is 2c., Chicago, but Eastern mills are experiencing no difficulty in booking orders at 1.90c. to 2c., Pittsburgh.

The mill quotation on plain material is 1.75c. to 2c., Chicago. Jobbers quote 2.70c. for plain material out of warehouse.

**Warehouse Prices.**—Local jobbers have reduced prices on wire and nails 15c. to 30c. per 100 lb. The new quotations are published under "Wire Products."

**Rails and Track Supplies.**—Demand for track supplies is active, although as a rule individual orders are smaller than some time ago. An exception is a current inquiry for 7000 tons of tie plates. After a long period of slack demand, a number of small inquiries for light rails have been received from coal operators, evidently indicating a desire to repair their lines in anticipation of an early reopening of their mines. Prices are unchanged.

Standard Bessemer and open-hearth rails, $40; light rails rolled from new steel, 1.75c., f.o.b. makers' mills.

Standard railroad spikes, 2.25c. to 2.35c., Pittsburgh; track bolts with square nuts, 3.25c. to 3.35c., Pittsburgh; tie plates, steel and iron, 1.85c. to 2c., f.o.b. mill; angle bars, 2.40c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.30c. base and track bolts 4.30c. base.

**Reinforcing Bars.**—Recent lettings include: Research Laboratory, Pittsburgh Plate Glass Co., Milwaukee, 125 tons, to Concrete Steel Co.; Thirty-Ninth Street Sewer, Chicago Sanitary District, 600 tons, to Concrete Steel Co.; High School, Houghton, Mich., 150 tons, to Corrugated Bar Co.; highway work, Kentucky, 150 tons, to Corrugated Bar Co.; High School, Ft. Madison, Ia., 150 tons, to Corrugated Bar Co.; Nelson Building, Davenport, Ia., 150 tons, to Corrugated Bar Co.; Benz Hotel, St. Paul, 150 tons, to Corrugated Bar Co. Pending business includes: Masonic Temple, St. Louis, 800 tons; High School, Wichita, Kan., 400 tons.

**Steel Castings.**—Steel foundries are generally very busy and current discounts on castings are very firm with the prospect of another advance within thirty days. The coal shortage is not affecting steel foundries as adversely as other foundries, because their furnaces largely burn oil or are operated by electricity.

**Cast-Iron Pipe.**—Prices have again advanced to a range of $38 to $39, base Birmingham, for 6 in. and larger. St. Paul, Minn., has let 535 tons to National Cast Iron Pipe Co. Other lettings are small or private.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $50.20 to $51.20; 6-in. and above, $46.20 to $47.20; class A and gas pipe, $3 extra.

**Coal and Coke.**—The local producer of by-product foundry coke will take no new business except on the basis of the price ruling at time of delivery. The Southern producer of by-product foundry coke, which recently took some business in this district, has withdrawn from the market. Plants using coal are experiencing great difficulty in getting deliveries, owing to car shortage and at the same time find prices so high as to make operation practically prohibitive. Western Kentucky bituminous coal is now bringing from $13.50 to $15, delivered Chicago. Malleable foundries are particularly hard hit by the situation and bar iron rolling mills are also in a tight position with the possibility of a complete shut down.

**Old Material.**—A moderate revival in buying, made up largely of small individual purchases together with a limited available supply of scrap, has given the market a stronger tone and has resulted in advances in a number of grades. While the fuel situation has caused consumers of scrap to buy from hand to mouth, it is also true that scrap offerings have declined sharply. The shopmen's strike has materially reduced the offerings of the railroads, the largest producers of scrap, while industrial concerns are neglecting to prepare their scrap for shipment owing to a shortage of labor. Consumption of open hearth grades by the Steel Corporation subsidiary has increased as the result of the banking of 4 blast furnaces. Railroad offerings include the Chicago & Northwestern, 2400 tons; the Wabash, 500 tons of miscellaneous scrap from dismantled cars, and the New York Central, the Michigan Central and the Grand Trunk, blind lists.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

*Per Gross Ton*

| | |
|---|---|
| Iron rails | $19.00 to $19.50 |
| Cast iron car wheels | 19.50 to 20.00 |
| Relaying rails | 22.50 to 27.50 |
| Rolled or forged steel car wheels | 18.50 to 19.00 |
| Rails for rerolling | 16.50 to 17.00 |
| Steel rails, less than 3 ft | 17.50 to 18.00 |
| Heavy melting steel | 15.50 to 16.00 |
| Frogs, switches and guards cut apart | 15.50 to 16.00 |
| Shoveling steel | 15.00 to 15.50 |
| Drop forge flashings | 11.50 to 12.00 |
| Hydraulic compressed sheet | 13.00 to 13.50 |
| Axle turnings | 13.50 to 14.00 |

*Per Net Ton*

| | |
|---|---|
| Iron angles and splice bars | 18.00 to 18.50 |
| Steel angle bars | 14.75 to 15.25 |
| Iron arch bars and transoms | 18.50 to 19.00 |
| Iron car axles | 23.00 to 23.50 |
| Steel car axles | 15.75 to 18.25 |
| No. 1 busheling | 12.50 to 13.00 |
| No. 2 busheling | 7.25 to 7.50 |
| Cut forge | 13.75 to 14.25 |
| Pipes and flues | 11.00 to 11.50 |
| No. 1 railroad wrought | 14.25 to 14.75 |
| No. 2 railroad wrought | 13.75 to 14.25 |
| Steel knuckles and couplers | 16.25 to 16.75 |
| Coil springs | 16.50 to 17.00 |
| No. 1 machinery cast | 17.00 to 17.50 |
| No. 1 railroad cast | 16.00 to 16.50 |
| Low phos. punchings | 15.00 to 15.50 |
| Locomotive tires, smooth | 13.00 to 13.50 |
| Machine shop turnings | 9.00 to 9.50 |
| Cast borings | 11.25 to 11.75 |
| Stove plate | 14.75 to 15.25 |
| Grate bars | 14.25 to 14.75 |
| Brake shoes | 14.00 to 14.50 |
| Railroad malleable | 16.00 to 16.50 |
| Agricultural malleable | 16.00 to 16.50 |

## National Industrial Conference Board on Situation

The National Industrial Conference Board, in its weekly radio review of industrial conditions, says:

"Railroad executives report that the roads are in good condition, that traffic has been little disturbed and that new men are rendering satisfactory service. Railroad shopmen on strike are reported as in more tractable mood and as willing to return to work on terms specified by President Harding provided satisfactory arrangements are made over the question of seniority.

"In his conferences with the strikers the President is understood to have insisted that the Labor Board's decisions be recognized and obeyed by both sides, that the strikers return to work and request a rehearing of their grievances, and has agreed also to request railroad executives to restore the strikers' former seniority privileges but that shopmen who remained at work shall be advanced in rating over the strikers. The question of seniority is a major consideration with railroad employees since it bears relation not only to pension privileges but determines the order in which men shall be discharged, men lowest in rank of seniority being the first to be laid off when discharges are ordered.

"While current strikes have tended to impede business recovery, business generally is good. Retail trade in many districts is reported satisfactory.

# New York

## Little Domestic Pig Iron Available—Foundries Inquiring, But Are Buying Sparingly

NEW YORK, Aug. 1.—There is no excitement in the market in view of the further tightening of the situation in pig iron and in fuel. A few buyers have inquired for pig iron for August and September deliveries and perhaps 1500 tons in all has been closed for early delivery in the past week. The foundries are showing more interest in foreign iron, for which prices have advanced from $1 to $2 per ton over the recent low point. Large purchases of coal have been made in England, but deliveries are uncertain and ocean freights are high. A New England by-product coke plant is out of the market in view of the cutting off of domestic coal supply.

**Pig Iron.**—Pending inquiries for iron amount to 1500 to 2000 tons. A near-by New York State foundry bought 400 tons of No. 1X iron for delivery within the week. One Connecticut interest has inquired for 900 tons of foundry iron in the last quarter and first quarter. Another New England inquiry is for 500 tons of malleable and a Connecticut foundry has asked for 500 tons of No. 2X. In the New York district there is an inquiry for 150 tons of high silicon iron for early delivery. Eastern Pennsylvania furnaces are quoting $28 to $29.50 for 2X iron, but little is available. Some Buffalo furnaces have put their price for prompt No. 2X at $28 at furnace, but there is still some Buffalo iron offered at $25 for delivery over the remainder of the year. A New York buyer came into the market for 1000 tons of foundry iron and has closed for 500 tons of Scotch iron. The latter could be had this week at $27, f.o.b. New York, but as high as $30 has been paid for Scotch iron delivered in Brooklyn. Most foundries are well provided with coke, but the few that needed to buy have found prices soaring, $16 to $17 at ovens being asked for foundry coke. Most furnaces have no iron to offer and in general foundries are unwilling to take the risk of present prices for deliveries running late into the year. No buying has resulted, as far as can be learned, from the three inquiries reported last week, one from a boiler company, another from a New Jersey foundry and a third from Springfield, Mass. On a New York State inquiry which came up last week $29.50, delivered, was quoted on Southern No. 1 iron. Foundries are getting little or no advance in prices of castings, to compensate for the high prices they are paying for pig iron, and evidently fear that any advance would curtail business.

We quote delivered in the New York district as follows, having added to furnace prices $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

| | |
|---|---|
| East. Pa. No. 1 fdy., sil. 2.75 to 3.25 | $31.77 to $32.77 |
| East. Pa. No. 2X fdy., sil. 2.25 to 2.75 | 30.77 to 31.77 |
| East. Pa. No. 2 fdy., sil. 1.75 to 2.25 | 29.77 to 30.77 |
| Buffalo, sil. 1.75 to 2.25 | 30.91 to 31.91 |
| No. 2 Virginia, sil. 1.75 to 2.25 | 29.44 to 30.44 |

**Finished Iron and Steel.**—Regular mill customers are having difficulty in getting their normal monthly amounts of steel—in some cases, indeed, being told that they cannot expect current deliveries. In that the uncertainty is greater than it was a week ago, the steel situation is worse and urgent buying naturally begets premium prices. Going business is reported at 1.80c. to 2c., Pittsburgh basis, on plates, shapes and bars. There are still those who entertain inquiries, but it appears the list of mills which are out of the market has been enlarged, although one mill which would not quote a week ago on material like plates will consider fresh business at a 2c. basis. Plates are, if anything, stronger than bars or shapes, and it is difficult to buy any of these forms of steel at less than 1.80c., Pittsburgh, for any reasonable delivery. A surprisingly large amount of fabricated steel work keeps coming before the trade, but nothing of moment is noted in railroad equipment buying in the East other than large locomotive purchases reported elsewhere. Bar iron has strengthened and we recognize a range of prices as noted below.

We quote for mill shipments, New York, as follows: Soft steel bars, 2.04c. to 2.24c.; structural shapes, 2.04c. to 2.19c.; bar iron, 1.94c. to 2.04c.; and steel plates, 2.04c. to 2.34c. On export shipments the freight rate from Pittsburgh to New York is 28.5c. per 100 lb., while the domestic rate is 34c.

**Ferroalloys.**—Demand for ferromanganese is confined to small and large lots for August shipment, which can be obtained and which have been sold at $67.50 to $70, seaboard. The spiegeleisen market is quiet and quotations are unchanged. There is a moderate demand for 50 per cent ferrosilicon at unchanged quotations. The uncertainty as to the future of the industrial situation has had its effect on these markets. Quotations are as follows:

| | |
|---|---|
| Ferromanganese, domestic, seaboard, per ton | $67.50 to $70.00 |
| Ferromanganese, British, seaboard, per ton | $67.50 to $70.00 |
| Spiegeleisen, 17 to 19 per cent | $25.00 |
| Spiegeleisen, 20 per cent | $36.00 |
| Ferrosilicon, 50 per cent, delivered, per ton | $52.00 to $55.00 |
| Ferrotungsten, per lb. of contained metal | 40c. to 50c. |
| Ferrochromium, 6 to 8 per cent carbon, 60 to 70 per cent Cr., per lb. Cr., delivered | 12c. to 14c. |
| Ferrovanadium, per lb of contained vanadium | $3.00 to $3.50 |
| Ferrocarbontitanium, 15 to 18 per cent, 1 ton to carloads, per ton | $200.00 |
| *Ores* | |
| Manganese ore, foreign, per unit, seaboard | 26c. to 30c. |
| Tungsten ore, per unit, in 60 per cent concentrates, nominal | $3.00 up |
| Chrome ore, basis 48 per cent $Cr_2O_3$, crude, per unit, Atlantic seaboard | 40c. to 45c. |
| Molybdenum ore, 85 per cent concentrates, per lb. of $MoS_2$, New York | 40c. to 45c. |

**High-Speed Steel.**—Both the price and business conditions in this market continue unchanged. Producers continue to quote 18 per cent tungsten high-speed steel at 75c. per lb., base, with special brands of some companies selling up as high as 95c. per lb.

**Cast-Iron Pipe.**—Prices are firm and demand is still heavy for the smaller sizes. The city of Buffalo is asking for bids on 12,000 ft. of 6-in. pipe. Deliveries in this district are from six to eight weeks. We quote, per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $53.50; 4-in. and 5-in., $58; 3-in., $63.80, with $4 additional for Class A and gas pipe.

**Old Material.**—The market is strong and prices firm with an upward tendency. Heavy melting steel is quotable at $10.50 to $11 per ton, the high price being well established in this district based upon shipments being made by one dealer to Buffalo by barge, the low freight rate thus obtained warranting higher prices. Steel is also being shipped to Monessen, Alan Wood, Jones & Laughlin, Bethlehem and the American Sheet & Tin Plate Co. Stove plate is slightly stronger than for several weeks past, one dealer in this district having closed on a tonnage which figures back to a basis of $11 per ton.

Buying prices per gross ton, New York, follow:

| | |
|---|---|
| Heavy melting steel, yard | $10.50 to $11.00 |
| Steel rails, short lengths, or equivalent | 11.25 to 11.75 |
| Rerolling rails | 11.50 to 12.00 |
| Relaying rails, nominal | 27.00 to 28.00 |
| Steel car axles | 16.00 to 17.00 |
| Iron car axles | 22.00 to 23.00 |
| No. 1 railroad wrought | 12.50 to 13.00 |
| Wrought iron track | 11.00 to 11.50 |
| Forge fire | 8.00 to 8.50 |
| No. 1 yard wrought, long | 10.50 to 11.00 |
| Cast borings (clean) | 9.25 to 10.25 |
| Machine-shop turnings | 9.25 to 10.25 |
| Mixed borings and turnings | 9.25 to 10.25 |
| Iron and steel pipe (1 in. diam., not under 2 ft. long) | 9.00 to 9.50 |
| Stove plate | 10.50 to 11.00 |
| Locomotive grate bars | 11.50 to 12.00 |
| Malleable cast (railroad) | 10.50 to 11.00 |
| Cast-iron car wheels | 13.00 to 13.50 |

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, follow:

| | |
|---|---|
| No. 1 machinery cast | $18.00 to $19.00 |
| No. 1 heavy cast (columns, building materials, etc.), cupola size | 16.50 to 17.00 |
| No. 1 heavy cast, not cupola size | 13.00 to 13.50 |
| No. 2 cast (radiators, cast boilers, etc.) | 12.00 to 12.50 |

**Warehouse Business.**—The situation is unchanged in this district. Prices are firm and business fairly active. Open-hearth spring steel is now quoted at 4c. to 6c. per lb. Sheets are still weak, but reported sales of black and galvanized sheets on a basis of 4c. and 5c. per lb.,

base, are far less numerous than formerly. The minimum price now obtainable is probably close to 4.20c. and 5.20c. per lb., base, on black and galvanized respectively, with sales of small lots ranging as high as 4.50c. and 5.50c. per lb., base. Brass and copper warehouses have again advanced prices on both brass and copper products, and report better business than at any time since purchasing by manufacturers of radio equipment ceased several weeks ago. We quote prices on page 336.

# Philadelphia

## Prices Climbing Especially in Pig Iron—Uncertainties of Priority System Dominate

PHILADELPHIA, Aug. 1.—The situation due to the railroad and coal strikes is going from bad to worse, and the iron and steel trade of the eastern Pennsylvania district does not know to-day what new conditions it may have to face to-morrow. Coal priorities have not as yet seriously complicated the muddle, but this is due to the fact that the Government plan has not been fully worked out. The fear is that when the preferred priorities have been taken care of the supply of coal and coke for steel plants and blast furnaces, already inadequate, will be further restricted and that more widespread banking of blast furnaces and slowing down of steel plant operations are inevitable. Even a settlement of the railroad strike, it is believed here, would not materially improve the situation, as there would immediately be a demand for coal from so many sources that industrial plants, fourth on the list, would not fare well for the next 30 or 60 days at least.

In the New River coal and coke field, car distributors have already been posted by the Federal board and cars are being allocated to the mines and coke ovens and shipments are being made as the Government directs. As yet this supervision has not extended to all districts, but it soon will become more comprehensive. As an example of the way the priorities are working, it is pointed out that 5000 tons of blast furnace coke, in storage at a Virginia blast furnace, would quickly be purchased by some eastern Pennsylvania furnace, but the railroads will not move it for such destination, and if sold it will probably go to a public utility plant.

The uncertainties the iron and steel trade is facing has resulted in less and less business being done. While there is no overwhelming demand for iron or steel, more orders are being offered than mills and furnaces are willing to accept. Prices continue their upward climb, particularly on pig iron, which is at least $1 to $2 a ton higher than a week ago.

**Pig Iron.**—Blast furnace operators do not seem to know just how the coal priority plan of the Government is going to affect them, but they fear the worst, especially as industrial plants generally are fourth on the list and presumably will not get coke until the preferred classifications are taken care of. The Coatesville furnace of the Midvale Steel & Ordnance Co., which has been furnishing some iron for merchant trade, was blown out on Sunday due to coke shortage. Other active furnaces are in a precarious position as to coke supply, but have little definite information as to whether their supply will be cut off entirely. Under these uncertain conditions iron prices have soared and $30 has been reached on foundry iron. On limited tonnages to regular customers two furnaces are quoting $28 to $30, furnace, on No. 2 plain and $29 to $31 in No. 2X. Sales of imported iron constitute the chief activity. Several lots of 1000 tons or more have been sold to cast iron pipe makers and small lots, usually not over 100 or 150 tons, have been sold to gray iron foundries. In all, possibly 10,000 tons of foreign iron have been disposed of in this market in the past few weeks. Prices range from $23.50 to $24 on French iron; from $26 to $27 on Middlesborough (English) and from $27.50 to $28.50 on Scotch iron, these prices all being f.o.b. cars at Philadelphia docks. Some foundrymen are hesitant about using foreign iron in their mixtures, but are doing so because of their inability to obtain their regular domestic brands. A surprising feature of the present situation is that there seems to be no alarming scarcity of iron; in other words, the majority of consumers are wholly or partially covered for the next 30 days or more and unless there should be serious interruption of shipments they believe they will get along some way until the strikes are settled. A few inquiries for fourth quarter have appeared, but melters are in most instances disposed to await the outcome of the present difficulties before making further commitments. One lot of 5000 tons of basic pig iron has been sold at $25, furnace, and a recent sale of standard basic was at $26, furnace. Furnaces would now quote $27, furnace.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia, and include freight rates varying from 76 cents to $1.64 per gross ton:

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| East. Pa. No. 2 plain, 1.75 to 2.25 sil. | $28.76 to $30.14 |
| East. Pa. No. 2X, 2.25 to 2.75 | 29.76 to 31.14 |
| East. Pa. No. 1X | 30.76 to 32.76 |
| Virginia No. 2 plain, 1.75 to 2.25 sil. | 29.17 to 30.17 |
| Virginia No. 2X, 2.25 to 2.75 sil. | 30.17 to 31.17 |
| Basic delivery eastern Pa. | 26.75 to 27.25 |
| Gray forge | 27.00 to 28.00 |
| Malleable | 28.00 to 30.00 |
| Standard low phos. (f.o.b. furnace) | 30.00 |
| Copper bearing low phos. (f.o.b. furnace) | 30.00 |

**Ferroalloys.**—Spot carloads of ferromanganese have been sold at $72.50, seaboard. The domestic and English prices remain at $67.50, seaboard, but this is for delivery in September or later, with the buyer assuming full risk as to the duty which the new tariff bill may impose. Spiegeleisen is offered at $36, furnace, for 19 to 21 per cent.

**Semi-Finished Steel.**—The Pennsylvania Railroad has bought a tonnage of special quality forging billets, for which it paid as high as $46, base, Pittsburgh. Nominal quotations are $35, Pittsburgh, for rerolling quality and $40 for forging quality, but few makers are willing to sell at these prices to-day.

**Plates.**—The plate market is now firmly established at 1.80c., Pittsburgh, it being impossible to buy for less for early shipment, while on some business as high as 2c., Pittsburgh, has been paid. One Eastern plate company is limiting the amount which it will sell to any one customer. The coal situation is precarious and companies which are operating their plate mills have no idea as to how long they will be able to continue. The Lukens Steel Co., which had two of its open-hearth furnaces fitted up with oil-burning equipment some time ago, is now equipping other furnaces to burn oil. As it had no oil storage facilities, the company has leased 10,000 gal. tank cars for this purpose. The Pennsylvania Railroad has bought about 5000 tons more of car repair material, making about 17,000 tons in the past two or three weeks, and it is stated that more will be bought shortly. As there are few mills able to make early deliveries of plates, the demands upon these mills are considerable and business is being turned away. We quote the market at 1.80c. to 2c., Pittsburgh.

**Structural Material.**—It is becoming more difficult to place orders for plain material and mills which are accepting business are doing so with qualifying clauses which protect them in case it is impossible, through coal shortage or railroad embargoes, to make shipment as promised. The mills are having no trouble in getting 1.75c. to 1.80c., Pittsburgh.

**Bars.**—The minimum for soft steel bars is 1.80c., Pittsburgh, and it is not easy to place orders even at this price with any degree of assurance as to deliveries. One leading maker is still out of the market and will take no further business, according to present intentions, until the coal and coke situation is clearer. Some makers of bar iron are now quoting 1.80c., Pittsburgh, for carload lots, while the minimum appears to be 1.70c. for carloads and 1.90c., Pittsburgh, for less than carloads.

**Sheets.**—Makers of sheets are exacting premium prices for prompt delivery material, these prices being several dollars a ton above the third quarter contract prices. As high as 2.75c., Pittsburgh, has been obtained for blue annealed sheets by one maker.

**Warehouse Business.**—Jobbers are doing a very satisfactory business under present conditions, as consumers are turning to them for supplies because of the fact that many of the mills are taking little or no business. We quote as follows for local delivery out of stock:

Soft steel bars and small shapes, 2.70c.; iron bars (except bands), 2.70c.; round edge iron, 2.90c.; round edge steel, iron finish, 1½ x ½ in., 2.90c.; round edge steel planished, 3.65c.; tank steel plates, ¼-in. and heavier, 2.80c.; tank steel plates, ⅜-in., 3c.; blue annealed steel sheets, No. 10 gage, 3.40c.; black sheets, No. 28 gage, 4.25c.; galvanized sheets, No. 28 gage, 5.25c.; square twisted and deformed steel bars, 2.80c.; structural shapes, 2.80c.; diamond pattern plates, ¼-in., 4.50c.; ⅜-in., 4.50c.; spring steel, 3.50c.; round cold-rolled steel, 3.35c.; squares and hexagons, cold-rolled steel, 3.70c.; steel hoops, No. 13 gage and lighter, 3.75c.; steel bands, No. 12 gage to ⅜-in., inclusive, 3.35c.; iron bands, 3.90c.; rails, 2.70c.; tool steel, 8c.; Norway iron, 5.50c.

**Coke.**—Prices paid for foundry coke range from $14 to $17, Connellsville. By-product coke from the plant of the Rainey-Wood Coke Co. is quoted at $16, Swedeland, Pa. Furnace coke is to be had in limited quantities at $14 to $15, Connellsville.

**Old Material.**—Steel scrap remains firm at $15, delivered, although there is very little demand. Prices generally are almost stationary and are holding well in view of the small volume of business that is being done. The only change is in cast scrap, which is slightly higher because of better demand. Foundries are evidently using more cast scrap on account of the shortage of pig iron. We quote for delivery at consumers' works in this district as follows:

We quote for delivery at consuming points in this district as follows:

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| No. 1 heavy melting steel | $15.00 to $15.50 |
| Scrap rails | 15.00 to 15.50 |
| Steel rails, rerolling | 17.00 to 17.50 |
| No. 1 low phos., heavy 0.04 and under | 22.00 to 24.00 |
| Cast iron car wheels | 17.50 to 18.50 |
| No. 1 railroad wrought | 17.50 to 18.50 |
| No. 1 yard wrought | 15.00 to 15.50 |
| No. 1 forge fire | 13.00 to 13.50 |
| Bundled sheets (for steel works) | 13.00 to 13.50 |
| No. 1 busheling | 12.50 to 13.00 |
| No. 2 busheling | 10.00 to 11.00 |
| Turnings (short shoveling grade for blast furnace use) | 13.00 to 13.50 |
| Mixed borings and turnings (for blast furnace use) | 13.00 to 13.50 |
| Machine-shop turnings (for steel works use) | 13.00 to 13.50 |
| Machine-shop turnings (for rolling mill use) | 13.50 to 14.00 |
| Heavy axle turnings (or equivalent) | 14.00 to 14.50 |
| Cast borings (for steel works and rolling mills) | 14.00 to 14.50 |
| Cast borings (for chemical plants) | 17.00 to 17.50 |
| No. 1 cast | 18.00 to 20.00 |
| Railroad grate bars | 14.50 to 15.00 |
| Stove plate (for steel plant use) | 15.00 to 15.50 |
| Railroad malleable | 15.00 to 15.50 |
| Wrought iron and soft steel pipes and tubes (new specifications) | 13.00 to 13.25 |
| Shafting | 20.00 to 20.50 |

# Cincinnati

CINCINNATI, Aug. 1.

**Pig Iron.**—The market is tightening up, particularly in Northern irons, which are at least 50c. higher than last week. At southern Ohio furnace, $25 is now the absolute minimum, with some furnaces having iron on yards quoting as high as $27. In the South, the situation is also stronger, the low priced seller having withdrawn from the market during the week, leaving furnace prices at $19 to $20, with little iron available. However, Southern resale iron is still available at $18.50, but it is likely that this price will be withdrawn before the end of the week. There is little activity in the market, sales being confined mostly to carload lots. A local melter bought 800 tons last week, 300 Northern and 500 Southern. It is understood that the Northern iron was placed in three lots on a $24.50, Ironton basis, and the Southern from $18.50 to $19, Birmingham. Another melter took several hundred tons of Southern iron; special conditions attaching to the order, particularly with regard to prompt shipment, were responsible for a price of $20, Birmingham. Several sales of up to 300 tons were made at $18.50 to $19. Little Northern iron was dealt in, the largest sale reported being for 100 tons as reported above. There are few inquiries. An Indiana melter is inquiring for 750 tons, a central Ohio melter for 200 tons for the last quarter, and a Michigan melter for 300 tons for the third quarter. An offer to buy 1000 tons of Southern iron was turned down by a furnace, as the price, $18.50, was not attractive. A number of Southern furnaces have withdrawn from the market, leaving only about two active sellers, and silvery furnaces in Jackson county have also announced their withdrawal. Belfont furnace at Ironton and Milton at Wellston have been banked as a result of the shortage of coke. Norton furnace at Ashland is the only merchant furnace producing in the Ironton-Ashland district, but it is understood the Whitaker-Glessner stack at Portsmouth will go on foundry iron within the next week. The American Rolling Mill Co. has one stack at Ashland and one at Columbus in blast, and it is expected that the latter will continue indefinitely, as a coke supply for the next two months is practically assured.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton, we quote f.o.b. Cincinnati:

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|---|---|
| Southern coke, sil. 1.75 to 2.25 (base) | $22.55 to $24.05 |
| Southern coke, sil. 2.25 to 2.75 (No. 2 soft) | 23.05 to 24.55 |
| Ohio silvery, 8 per cent | 34.77 |
| Southern Ohio coke, sil. 1.75 to 2.25 (No. 2) | 27.27 |
| Basic Northern | 27.27 |
| Malleable | 27.27 |

**Plant Operations.**—No serious inconvenience has as yet been experienced by steel mills in this district as a result of the coal and rail strikes. While a number of merchant blast furnaces have been banked, steel-making furnaces are able to keep running. The American Rolling Mill Co., at Middletown, Ohio, has put the blooming mill on 24-hr. turn, three eight-hour shifts being installed. The Newport Rolling Mills Co. and the Andrews Steel Co. at Newport, Ky., while suffering a little inconvenience on account of delayed shipments, have been able to maintain their customary schedules. The same is true of the Whitaker-Glessner Co. at Portsmouth. This week is expected to be the crucial one for steel plants, but it is hoped it will be unnecessary to curtail operations.

**Finished Materials.**—The trade has apparently gained the idea that it is useless to attempt to get on the books of steel companies for some time to come. Practically all of the independent companies are now definitely out of the market on new business, but are still accepting specifications on contracts. The Steel Corporation is accepting business for indefinite delivery. Sheet mills are practically sold up for the third quarter, and are not anxious to accept any other orders for this delivery. Prices on all steel products, while having an advancing tendency, show little change over last week. Some plate mills are quoting 2.10c., but this is taken to mean that they are out of the market. On bars, shapes and plates, the range is 1.70c. to 1.80c., with little business being booked. Sheets are quoted quite generally at 2.40c. to 2.60c. for blue annealed, 3.15c. to 3.30c. for black and 4.15c. to 4.40c. for galvanized. The American Sheet & Tin Plate Co. is reported to be out of the market for the time being, as it is expected that some of its sheet and tin mills will have to suspend, owing to the fuel situation. Tin plate specifications are coming in fairly well. There is a better demand for nails, and shipments are coming through in fairly good time. On other wire products the market is quiet. A number of small structural awards were reported, but new inquiries were light. Bids on 400 tons of bars for a new academy for the Sisters of Mercy, Cincinnati, closed July 31.

**Warehouse Business.**—Jobbers report a pressing demand for steel products for immediate delivery, and some fair-sized orders for shipment out of stock were booked, including one order for 100 tons of reinforcing bars. Cold-rolled prices have been advanced $3 per ton to 3.50c. for rounds, and 4c. for flats, squares and hexagons. The demand for nails is increasing, and local jobbers have been forced to replenish their stocks from mills. Jobbers of bolts, nuts and rivets will likely make

a 5 per cent advance in their prices shortly, in line with higher prices recently announced by manufacturers.

Jobbers quote: Iron and steel bars, 2.75c. base; hoops, 3.60c.; bands, 3.35c. base; shapes and plates, 2.85c. base; reinforcing bars, 2.82½c. base; cold-rolled rounds, 3.50c. base; flats, squares and hexagons, 4c. base; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.50c.; No. 28 galvanized sheets, 5.50c.; No. 9 annealed wire, $2.70 per 100 lb.; common wire nails, $2.85 per keg, base.

**Coke.**—There is a fair demand, but dealers report meeting with some resistance on the part of buyers to paying the high prices now ruling. However, melters covered by contracts are asking ovens to anticipate shipments. With the exception of Connellsville coke, which has sold as high as $16 to $17, prices show little change. By-product coke is available at $9, Connellsville basis, to regular customers, and August quotas are being filled at this figure. Wise County foundry coke is quoted at $10 to $10.50, and New River foundry at $8.50 to $12. Coke is moving in better volume, and shipments are going forward with more rapidity than has been the case for the last two weeks.

**Old Material.**—Local dealers report the scrap market as stagnant. Very little scrap is moving, as railroads have practically embargoed the use of open top equipment for other than coal movement. Mills are not concerned at present, and foundries, while showing more interest, are buying only from hand to mouth. Prices, which are unchanged, are regarded as nominal.

We quote dealers' buying prices, f.o.b. cars Cincinnati:

| | | |
|---|---|---|
| *Per Gross Ton* | | |
| Bundled sheets | $8.00 to | $8.50 |
| Iron rails | 13.50 to | 14.00 |
| Relaying rails, 50 lb. and up | 26.50 to | 27.00 |
| Rails for rerolling | 13.50 to | 14.00 |
| Heavy melting steel | 13.00 to | 13.50 |
| Steel rails for melting | 13.00 to | 13.50 |
| Car wheels | 14.50 to | 15.00 |
| *Per Net Ton* | | |
| No. 1 railroad wrought | 11.50 to | 12.00 |
| Cast borings | 9.00 to | 9.50 |
| Steel turnings | 8.00 to | 8.50 |
| Railroad cast | 14.00 to | 14.50 |
| No. 1 machinery | 16.00 to | 16.50 |
| Burnt scrap | 9.50 to | 10.00 |
| Iron axles | 18.00 to | 18.50 |
| Locomotive tires (smooth inside) | 11.00 to | 11.50 |
| Pipes and flues | 6.50 to | 7.00 |

## St. Louis

ST. LOUIS, Aug. 1.

**Pig Iron.**—Further advances are expected. Pig iron is scarce, as the makers are well sold up on all grades. The greatest demand is for iron of a high silicon, inquiries being mostly for grades of 2.25 per cent and higher, but makers have very little of these grades; the East Side maker has none. Buying was only of small lots, and there is no call for large tonnages. Melters are fairly well supplied with iron, except high-silicon grades. They realize the situation and regard it useless to look far to the future. A report of the Federal Reserve Bank of St. Louis says that the melt of pig iron, according to the figures of the reporting interests, increased in the eighth reserve district approximately 5¾ per cent in June over May. Stove manufacturers, seven interests reporting to the bank, showed June sales from 23 to 51 per cent larger than a year ago, and about steady with the preceding month. The demand for ferroalloys has taken a sudden spurt, inquiries totaling 600 tons for various items coming from district users.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago and $5.17 from Birmingham and 81 cents average switching charge from Granite City:

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|---|---|
| Northern foundry, sil. 1.75 to 2.25 (third quar.) | $26.66 |
| Northern malleable, sil. 1.75 to 2.25 (third quar.) | 26.56 |
| Basic (third quar.) | 26.56 |
| Southern foundry, all rail, sil. 1.75 to 2.25 | 24.48 |
| Southern foundry, water and rail, sil. 1.75 to 2.25, f.o.b. St. Louis | 22.17 |

**Finished Iron and Steel.**—Local fabricators report that there has been a marked falling off in inquiries. Business interests are said to be loath to enter any new building enterprises until the strike situation clears up. The contract is expected to be let this week for the American Can Co. building at New Orleans, involving 200 tons of structural steel and 500 tons of reinforcing bars, and word has been received here that the Virginia Bridge & Iron Co. received the contract for the 700 tons of structural steel to be used in the Ford Motor Co. assembly plant at New Orleans. Railroad inquiries were confined in the week to 3000 kegs of standard track spikes for the Missouri Pacific and 300 kegs for the St. Louis Southwestern. The railroad purchasing agents care only to talk to persons who sell coal. The only inquiries were for a few cars of sheets. Some of the largest steel mills are out of the market, due to heavy order files and curtailed production. Word has been received here that Inland Steel Co. has increased the price of plates from 1.80c., Chicago, to 2c. Warehouse prices are higher.

For stock out of warehouse we quote: Soft steel bars, 2.70c. per lb.; iron bars, 2.70c.; structural shapes, 2.80c.; tank plates, 2.80c.; No. 10 blue annealed sheets, 3.85c.; No. 28 black sheets, cold rolled, one pass, 4.45c.; cold drawn rounds, shafting and screw stock, 3.50c.; structural rivets, $3.35 per 100 lb.; boiler rivets, $3.45; tank rivets, ⅞ in. and smaller, 60 per cent off list; machine bolts, large, 50 and 10 per cent; small, 50-10 and 10 per cent; carriage bolts, large, 55-5 per cent; small, 60 and 10 per cent; lag screws, 60 per cent; hot pressed nuts, square or hexagon blank, $3.50; and tapped, $3.25 off list.

**Coke.**—The trade here is being overwhelmed with orders for coke, business reaching war-time proportions. The orders are coming in from the industries, and from the coal trade, the coal strike creating new users for coke as well as making it more difficult for producers of coke to get supplies of the raw material. The St. Louis by-product producers are out of the market, and are making only enough coke to take care of their water-gas contracts. The Granite City by-product producer is now quoting $11, f.o.b. furnace, for metallurgical coke, an increase of $2 a ton in the last two weeks. The demand for coke still exceeds production and stocks in storage have been heavily drawn on. Connellsville coke is quoted at $14 to $14.50 at the ovens, and prices are steadily mounting.

**Old Material.**—The market for old material is higher on several items, and the market continues strong. Not much material is coming in, shipments being held up on account of the railroad strike, and the railroads themselves are not offering any lists, as labor is too scarce and is needed for more urgent duties than assembling scrap. Buying of scrap by consumers has not been so heavy.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

| | | |
|---|---|---|
| *Per Gross Ton* | | |
| Old iron rails | $16.75 to | $17.25 |
| Rails for rerolling | 15.75 to | 16.25 |
| Steel rails, less than 3 ft | 16.25 to | 16.75 |
| Relaying rails, standard section | 25.00 to | 28.00 |
| Cast iron car wheels | 18.50 to | 19.00 |
| No. 1 heavy railroad melting steel | 14.75 to | 15.25 |
| No. 1 heavy shoveling steel | 14.00 to | 14.50 |
| Ordinary shoveling steel | 13.75 to | 14.25 |
| Frogs, switches and guards, cut apart | 15.25 to | 15.75 |
| *Per Net Ton* | | |
| Heavy axle and tire turnings | 9.50 to | 10.00 |
| Steel angle bars | 13.75 to | 14.25 |
| Iron car axles | 23.50 to | 24.00 |
| Steel car axles | 17.00 to | 17.50 |
| Wrought iron bars and transoms | 19.00 to | 19.50 |
| No. 1 railroad wrought | 13.50 to | 14.00 |
| No. 2 railroad wrought | 13.00 to | 13.50 |
| Railroad springs | 16.00 to | 16.50 |
| Steel couplers and knuckles | 17.00 to | 17.50 |
| Cast iron borings | 9.00 to | 9.50 |
| No. 1 busheling | 11.75 to | 12.25 |
| No. 1 railroad cast | 15.50 to | 16.00 |
| Stove plate and light cast | 12.75 to | 13.25 |
| Railroad malleable | 14.00 to | 14.50 |
| Pipes and flues | 8.75 to | 9.25 |
| Machine shop turnings | 9.25 to | 9.75 |

## Birmingham

BIRMINGHAM, Aug. 1.

**Pig Iron.**—One large furnace operator holding firmly for some time to a $20 base reports the sale of 1500 tons to Philadelphia for fourth quarter delivery at that price. Two were lots of 500 tons. Other sales reported, but believed to date back a week to ten days, were lots of 500 tons in Chicago and Cincinnati districts at $18.50. Sales of lots of that size made during the past week brought $19 and were made by maker lately selling on the $18.50 base. No Birmingham maker is longer quoting under $19. The Alabama Co. went out of market early in the week after doing a fairly good fourth quarter entrance business at $20. The Central Coal &

Iron Co. expects to resume at Holt furnace, which is under repairs, around Aug. 7. The Tennessee company resumed at a third Bessemer furnace on July 22 and has nine in operation, six on basic, two on foundry and one on ferro. This is up to maximum of the war period and the subsequent inflation period. None of the blast furnaces has suffered from a production standpoint and fuel priorities will not hamper them. The Woodward Iron Co. and the Tennessee company are fully self-sustaining, the Sloss-Sheffield Steel & Iron Co. and the Central Coal & Iron Co. supply municipalities with gas and other companies will scarcely be called on to divert their own coal to commercial purposes. No foundries, or machine shops, and no pipe works have been affected as to production and do not apprehend it. All mills manage to get production started to destination with few exceptions, but none can tell when cars will arrive.

We quote per gross ton f.o.b. Birmingham district furnaces as follows:

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|---|---|
| Foundry, silicon 1.75 to 2.25 | $19.00 to $20.00 |
| Basic | 18.50 to 19.00 |
| Charcoal, warm blast | 30.00 to 32.00 |

**Finishing Mills.**—All steel mills have weathered strikes so far as production is concerned. The Tennessee company continues double turn at finishing mills and 100 per cent in ingot mill this week. The Gulf States Steel Co. has gone back to three open hearth furnaces because the supply of steel has caught up with finishing capacity. The rod mill of this company is turning out 272 tons a day, a new July record, it is reported. The Conners Steel Co. has been piling crossties, but this week began to move them to Texas points. Bar demand is very strong.

**Cast Iron Pipe.**—All pressure pipe shops are on full turn. New business was small this week owing to the general state of uncertainty. Base is firm at $37 minimum. The sanitary pipe base of $65 has disappeared and $60 is the new high. The former base was really a bonus for quick delivery. All shops are busy, but report poor deliveries.

**Coal and Coke.**—The base price under new Hoover agreement is $2.60, Pratt seam, which will do away with recent spot prices of as high as $4. Two Western carriers have given orders for all the coal that can be furnished them. Mine production went to 370,000 tons week of July 22, making a new high record for the past five years. The Semet-Solvay Co. fired its 60 idle ovens this week and went to 100 per cent of operations, an increase since July 1 of 100 per cent. All 240 ovens are now active. The Republic Iron & Steel Co. and the Alabama Co. are among the concerns using the supply, furnishing their own coal. Coke remains at $5.50 to $6.

**Old Material.**—Largest interests have lately paid $12 for No. 1 steel. That market seems stronger than it has been in a long time. Quoted prices are firm.

We quote per gross ton f.o.b. Birmingham district yards as follows:

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|---|---|
| Steel rails | $13.00 to $15.00 |
| No. 2 steel | 12.00 to 14.00 |
| No. 1 cast | 15.00 to 16.00 |
| Car wheels | 14.00 to 15.00 |
| Tramcar wheels | 13.00 to 14.00 |
| Stove plate | 13.00 to 14.00 |
| Cast iron borings | 6.00 to 7.00 |
| Machine shop turnings | 4.00 to 5.00 |

## Boston

BOSTON, Aug. 1.

**Pig Iron.**—Sales of more than 3000 tons of foreign iron, mostly Scotch, but including English, French and Belgian, are reported by brokers. They range from 100 to 700 tons each, largely the equivalent of domestic No. 2X, and for August arrival. Price details are lacking. It is reported by most brokers, however, iron has advanced, in some cases to the equivalent of $28, furnace, for No. 2X eastern Pennsylvania and $26.75 for Buffalo. In other cases foreign iron is even higher, figuring on a delivered New England consuming point basis. One eastern Pennsylvania furnace sold a limited tonnage in this territory the past week at $28, furnace base. No eastern Pennsylvania, Buffalo, Virginia or Alabama furnace is now making quotations, except on rare occasions for car lots. Resale Virginia and Alabama is to be had as well as Alabama at $30 base on cars at Providence, R. I. Inquiries for iron are more numerous than for some time and include 300 tons high silicon malleable wanted by a Massachusetts foundry; a like quantity by a Naugatuck Valley, Conn., melter; 500 tons No. 2X by a Providence, R. I., concern; and numerous car lots, mostly for prompt shipment. Lake charcoal iron has advanced $1 to $30 furnace base, and a limited tonnage sold in this territory on that basis.

We quote delivered prices, on the basis of the latest reported sales, now infrequent, and as follows, having added to furnace prices $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

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| East. Penn., sil. 2.25 to 2.75 | $30.15 to $30.65 |
| East. Penn., sil. 1.75 to 2.25 | 29.65 to 30.15 |
| Buffalo, sil. 2.25 to 2.75 | 29.91 to 30.41 |
| Buffalo, sil. 1.75 to 2.25 | 29.41 to 29.91 |
| Alabama, sil. 2.25 to 2.75 | 28.60 to 30.10 |
| Alabama, sil. 1.75 to 2.25 | 28.10 to 29.60 |

**Warehouse Business.**—Aside from an advance of 15c. per 100 lb. in blue annealed sheets to a basis of $3.90 for No. 10, prices on warehouse products remain unchanged. An improvement in the volume of iron and steel moving out of local warehouses is reported. Business is on a larger scale than at any previous time this year, according to a majority of the distributers. Sentiment is stronger regarding bolt and nut prices, with consumption heavier than last week. Wrought steel washers are approximately 10 per cent higher because of an increasing demand and a shortage of material.

Jobbers quote: Soft steel bars, $2.75½ per 100 lb. base; flats, $3.40½; concrete bars, $2.90 to $3.03; structural steel, $2.75½ to $2.90½; tire steel, $4.15 to $4.50; open-hearth spring steel, $4.50 to $6; crucible spring steel, $11.50; steel bands, $3.90; hoop steel, $4.40; cold rolled steel, $3.50 to $4; refined iron, $2.75½; best refined iron, $4.25; Wayne iron, $5.50; Norway iron, $6 to $6.50; plates, $2.85½ to $3.04; No. 10 blue annealed sheets, $3.90 per 100 lb. base; No. 28 black sheets, $4.90; No. 28 galvanized sheets, $5.96.

**Finished Iron and Steel.**—McClintic-Marshall Co. will fabricate approximately 1000 tons of structural steel for the State pier, Portland, Me. The city of Boston has awarded about 150 tons of beams to the Bethlehem Steel Co. Prospective fabricating tonnages in this territory are unimportant. Some bar business was placed the past week at full prices, but a majority of the producers did not accept business. Tonnages and prices on other steel products are subjected to mill confirmation before accepted. The volume of new business booked here therefore was small. With most mills, July was a lean month so far as New England is concerned. New England wire mills are well supplied with raw material needed for their processes, and the nature of their products is such the priority order of the Interstate Commerce Commission will work comparatively little hardship.

**Soil Pipe.**—The demand for soil pipe continues of large proportions, and producers are well booked up to Sept. 1 or later. All sizes are in urgent request, but the call for 2, 3, 4 and 5-in., single anl double hub, is especially brisk. Prices have not changed for some time, the market remaining at 33, 10 and 5 per cent discount. Stocks in distributers or jobbers' hands are unusually small for this time of the year.

**Cast Iron Pipe.**—Inquiry for cast iron pipe is expanding and includes round tonnages wanted by municipalities. Producers, however, apparently are not anxious to commit themselves further except in a small way and then only for extended deliveries, inasmuch as they sold up for practically the balance of the year. The only round tonnage accepted in this territory of late is 200 tons of 6-in. pipe by the Crane Co., Chicago, for West Springfield, Mass. Bids will be opened this week on approximately 200 tons of 6 and 8-in. pipe and fittings for the Massachusetts Department of Mental Diseases. Pipe prices have been moved up $2 a ton to a basis of $57.10, delivered, Boston common points for 6-in. and larger, and $62.10 for 4-in. pipe. The usual differential of $4 is made on class A and gas pipe. The freight rate on pipe from southern points to Boston common points is $5.10, contrasted with $5.70 heretofore.

**Coke.**—New England producers of by-product foundry coke have advanced contract fuel $1 a ton to $16.50 delivered, where the local freight does not exceed $3.10. Both the New England Coal & Coke Co. and the Providence Gas Co. will accept no further busi-

ness during August or until the coal supply situation is clearer. This action on their part eliminates the spot market. The New England Coal & Coke Co. is operating 240 of its 400 ovens. The normal number of ovens operated at its plant is 310. Production to-day therefore is 77.41 per cent of normal.

Old Material.—Chemical borings are in demand at better than $12 shipping point. Approximately 1000 tons were bought in New England the past week for shipment outside. Mixed borings and turnings also are in demand at $9 to $9.50 on cars shipping point, fully 1000 tons having been taken on that basis since last reports. A Portland, Me., rolling mill is in the market for shafting at about $19 delivered, and some scrap rail sat $11.25 shipping point were bought for a Pennsylvania mill. A Norwood, Mass., foundry is still inquiring for stove plate at $14 delivered, but material is scarce at that figure. Car lots sold the past week at $15.50 and $16.40 delivered Cape Cod points. A sale of 100 tons of machinery cast at $18 delivered Putnam, Conn., is reported, but New England foundries in general continue to supply requirements from local yards. The old material market otherwise has been quiet. Pennsylvania mills are not interested in heavy melting steel due to the uncertainty of the fuel situation.

The following prices are for gross ton lots delivered consuming points:

| | |
|---|---|
| No. 1 machinery cast | $19.00 to $20.00 |
| No. 2 machinery cast | 17.00 to 18.00 |
| Stove plate | 15.50 to 16.50 |
| Railroad malleable | 15.00 to 15.50 |
| Street car wheels | 18.00 to 19.00 |

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

| | |
|---|---|
| No. 1 heavy melting steel | $11.00 to $11.50 |
| No. 1 railroad wrought | 11.50 to 12.00 |
| No. 1 yard wrought | 10.00 to 10.50 |
| Wrought pipe (1 in. in diam., over 2 ft. long) | 8.00 to 8.50 |
| Machine shop turnings | 9.00 to 9.50 |
| Cast iron borings, rolling mill | 9.50 to 10.00 |
| Cast iron borings, chemical | 12.00 to 12.50 |
| Blast furnace borings and turnings | 9.00 to 9.50 |
| Forged scrap and bundled skeleton | 8.00 to 8.50 |
| Street car axles and shafting | 14.50 to 15.00 |
| Rails for rerolling | 11.00 to 11.50 |

# Cleveland

## Further Shut-downs Imminent—Advance of $1 in Pig Iron

CLEVELAND, Aug. 1.—Although there has been no change in the number of active blast furnaces during the past week and steel capacity in operation is about the same, the industrial situation in this district is much more serious than it was a week ago, owing to the increasing difficulty in obtaining delivery of coal and coke. Blast furnaces are working on a hand-to-mouth basis and may be blown out or banked any day. The supply of coal for all steel plants is inadequate and prices very high. Some steel companies are paying $10 per ton for coal. Lake traffic is suffering on account of coal shortage and a number of vessels have been tied up, unable to fill their bunkers. The fear is that unless the coal and shopmen's strikes are settled within a week or two, many plants will be forced into idleness.

**Iron Ore.**—The movement of iron ore from upper Lake docks in July was somewhat disappointing. It was estimated that the shipments would amount to over 9,000,000 tons, but the strike of shopmen interfered to some extent and the total was 8,942,337 tons, which compares with 4,047,687 in July of last year. The movement to Aug. 1 was 17,293,513 tons, compared with 10,418,914 tons to Aug. 1 last year. In spite of difficulty in getting coal, the vessel owners expect to be able to handle all the furnaces can receive this month. Although 98½ per cent of the members of the International Seamen's Union voted to strike on the Great Lakes the union officials have decided not to call a strike. Evidently they consider that this is an inopportune time to try conclusions with the vessel operators.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, $5.95; Old range non-Bessemer, 51½ per cent iron, $5.20; Mesabi Bessemer, 55 per cent iron, $5.70; Mesabi non-Bessemer, 51½ per cent iron, $5.05.

**Pig Iron.**—Furnaces in the Cleveland district have very little iron to sell and transactions are few. One company, which has a considerable tonnage of basic iron, is disposed to hold it for its own use. Recent pending inquiries for steel making iron, including one for 3000 tons of basic and 3000 tons of Bessemer from a West Virginia consumer, have not been placed. Another steel company is understood to be in the market for 2000 to 3000 tons of basic iron. Foundry iron prices are largely nominal, and $27, Cleveland, is probably the minimum. Sales have been made at Buffalo on a basis of $28, furnace, for No. 2 plain and $30 for No. 1 and malleable. It is doubtful whether any purchases could be made at these prices to-day.

Quotations below are f.o.b. local furnace for Northern foundry iron, not including a 50c. switching charge. Other quotations except basic and low phosphorus are delivered Cleveland, being based on a $3.02 rate from Jackson and a $6 rate from Birmingham:

| | |
|---|---|
| Basic, Valley furnace | $26.00 |
| Northern No. 2 fdy., sil. 1.75 to 2.25 | $27.00 to 28.00 |
| Southern fdy., sil. 1.75 to 2.25 | 24.50 |
| Ohio silvery, sil. 8 per cent | 33.52 |
| Standard low phos., Valley furnace | 33.00 |

**Finished Iron and Steel.**—If any sales of shapes, plates or bars are being made by Steel Corporation subsidiaries at less than 1.70c., Pittsburgh, they are very exceptional and on highly desirable business, with much uncertainty as to the time of delivery. The plate market is very strong. This is illustrated by a sale by an independent Cleveland company of 140 tons to a railroad for delivery in Chicago on a basis of 2.10c., Pittsburgh, or 2.44c., Chicago. Independents able to give prompt delivery have no difficulty in obtaining 2c. to 2.15c. on tank quality. The demand for small sizes of bars and angles is exceptionally heavy. On reinforcing bars prices range from 1.70c. to 1.80c., with the latter quotation prevailing, except on very desirable business. On cold drawn steel, delivery can be made in two to three weeks, but the companies that can give anything like early delivery on hot rolled material are few.

**Warehouse Business.**—Warehouse business is fairly active. Quotations remain unchanged, although on hoops and bands some warehouses are obtaining 3.50c.

Jobbers quote steel bars, 2.56c.; plates and structural shapes, 2.66c.; No. 9 galvanized wire, 3c.; No. 9 annealed wire, 2.50c.; No. 28 black sheets, 4c.; No. 28 galvanized sheets, 5c.; No. 10 blue annealed sheets, 3.50c. to 3.61c.; hoops and bands, 3.21c.; cold-rolled rounds, 3.30c.; flats, squares and hexagons, 3.80c.

**Semi-Finished Steel.**—The scarcity of semi-finished steel is illustrated by the fact that a leading producer of slabs quoted a customer $50 this week on an inquiry for several hundred tons. While the normal price of $35 on sheet bars, billets and slabs has not been changed, it seems probable that $40 will soon be the prevailing price.

**Sheets.**—Business is active and independents who are quoting 3.25c. to 3.30c. on black, 4.25c. to 4.50c. on galvanized, and 2.50c. to 2.55c. on blue annealed are several weeks behind on deliveries, although they have recently been very conservative in making promises. The demand for strip steel is extremely strong and mills are running at full capacity.

**Cast Iron Pipe.**—The United States Cast Iron Pipe & Foundry Co. was low bidder on 1625 tons of 24 to 60-in. cast iron pipe, and the Bowler Foundry Co. was low on 155 tons of fittings, the bids being $46.95 and $94.25, respectively. Contracts will be awarded to these companies.

**Bolts, Nuts and Rivets.**—Most manufacturers have more business than they can take care of comfortably and prices are strong. Bolt and nut manufacturers particularly report that business is more active than it has been at any time since the spring of 1920, and there is a likelihood of a scarcity of bolts. The $5 advance on structural and boiler rivets announced last week is being rigidly adhered to by nearly all manufacturers. There is much complaint in regard to the slow delivery of steel to bolt and nut plants. Makers of cap and set screws may announce an advance at an early date.

**Coke.**—The situation continues to be a source of great embarrassment to all consumers. The latest sale of Connellsville foundry coke was at $17. The outlook is that even higher prices will prevail and furnace coke is not obtainable at any price.

**Old Material.**—The strike situation continues to have a depressing effect on the scrap market and transactions are few. On a number of grades, prices have declined from 25c. to 50c.

We quote per gross ton, f.o.b. Cleveland, as follows:

| | |
|---|---|
| Heavy melting steel | $14.75 to $15.00 |
| Steel rails, under 3 ft | 15.25 to 15.50 |
| Rails for rolling | 15.75 to 16.25 |
| Iron rails | 14.00 to 15.00 |
| Iron car axles | 18.00 to 19.00 |
| Low phosphorus melting | 16.00 to 16.25 |
| Cast borings | 12.00 to 12.25 |
| Machine shop turnings | 11.50 to 12.00 |
| Mixed borings and short turnings | 11.75 to 12.00 |
| Compressed steel | 12.85 to 13.25 |
| Railroad wrought | 14.00 to 14.50 |
| Railroad malleable | 15.50 to 16.00 |
| Light bundled sheet stampings | 10.00 to 10.25 |
| Steel axle turnings | 13.00 to 13.50 |
| No. 1 cast | 17.00 to 17.50 |
| No. 1 busheling | 10.25 to 10.50 |
| Drop forge flashings over 10 in | 10.25 to 10.50 |
| Drop forge flashings under 10 in | 10.00 to 10.50 |
| Railroad grate bars | 13.75 to 14.25 |
| Stove plate | 13.75 to 14.25 |
| Pipes and flues | 10.00 to 11.00 |

## Buffalo

BUFFALO, Aug. 1.

**Pig Iron.**—Two Buffalo producers have each banked one furnace and there is strong likelihood that further curtailment will develop within a few days. Rogers, Brown & Co., and the Donner Steel Co., are the two interests which have banked furnaces. Only one Buffalo producer has iron to sell—except in isolated cases where a carload is available here or there under special insistent conditions. It is hard to determine the base price of foundry iron because while iron was available, there was no difficulty in obtaining $30 for No. 2 plain foundry. Two carloads were sold by one interest—their last sale at $30 and another tonnage slightly in excess of a carload could have been sold at $30 but a sight draft transaction was not agreeable to the purchaser. Inquiry is heavy. All big buyers are in the market and it is estimated that 50,000 tons could be disposed of at the Buffalo district without difficulty if the iron was available.

We quote f.o.b. per gross ton Buffalo as follows:

| | |
|---|---|
| No. 1 foundry, 2.75 to 3.25 sil | $29.00 |
| No. 2X foundry, 2.25 to 2.75 sil | 28.50 |
| No. 2 plain, 1.75 to 2.25 sil | 28.00 |
| Basic | 25.00 |
| Malleable | 28.00 |
| Lake Superior charcoal | 31.78 |

**Finished Iron and Steel.**—The shut down of blast furnaces has further interfered with mill operation on finished material and if anything the mills are in a more precarious condition than represented last week. There is likely to be a complete shut down within a few days of several departments of leading interests here. The Lackawanna Steel Co. shut down the rail mill on July 29. The local branch of an independent is booking only black sheets at 3.15c. and withdrew on pipe within the week. With the exception of repair work, there is nothing new coming out in the structural field nor are any big operations expected in 1922. The Buffalo Steel Car Company, which has considerable car repair work contracted for, was seriously damaged by fire on July 24. The Sutherland Building Co. of St. Louis has the general contract for a new building for the Erie Malleables Co., of Erie, Pa., involving 450 tons. Morris & Allan, of Buffalo, are low bidders on the new buildings for the Erie County firm, Alden, N. Y.

**Warehouse Business.** — Transportation difficulties have not seriously affected delivery of warehouse material for the reason that many of the consignments are being trucked. Two warehouses are extending the radius of their trucking schedules. Inquiry is coming in from many points outside the district, indicative of the inability of warehouses in some points to furnish material. There is a healthy demand for all materials from all quarters.

We quote warehouse prices, Buffalo, as follows: Structural shapes, 2.85c.; plates, 2.85c.; soft steel bars, 2.75c.; hoops, 3.55c.; bands, 3.40c.; blue annealed sheets, No. 10 gage, 3.80c.; galvanized steel sheets, No. 28 gage, 5.60c.; black sheets, No. 28, 4.60c.; cold rolled round shafting, 3.55c.

**Old Material.**—There is a lively local demand for No. 1 machinery cast scrap and one large consumer has bought about 4000 tons in the last ten days. Mills are not anxious to buy steel on account of the strike and the fuel situation and dealers are finding it hard to obtain cars to ship material contracted for lately. There has been no advance in prices except a stiffening in the price of cast scrap.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

| | |
|---|---|
| Heavy melting steel | $16.75 to $17.00 |
| Low phos., 0.04 and under | 18.00 to 19.00 |
| No. 1 railroad wrought | 16.00 to 16.50 |
| Car wheels | 17.00 to 18.00 |
| Machine shop turnings | 10.50 to 11.00 |
| Cast iron borings | 14.00 to 14.50 |
| Heavy axle turnings | 14.00 to 14.50 |
| Grate bars | 14.00 to 14.50 |
| No. 1 busheling | 15.00 to 15.50 |
| Stove plate | 15.00 to 15.50 |
| Bundled sheet stampings | 11.50 to 12.00 |
| No. 1 machinery cast | 18.50 to 19.50 |
| Hydraulic compressed | 15.00 to 15.50 |
| Railroad malleable | 17.00 to 17.50 |

## San Francisco

SAN FRANCISCO, July 26.

**Pig Iron.**—Conditions on the Coast reflect the general instability at present existing, including the rate war between intercoastal operators, but these inconveniences of transportation are somewhat relieved by consumers turning their attention to foreign material, almost to the exclusion of domestic. In any case, demand during the past two weeks has not been very urgent, and the tonnage placed scarcely amounts to more than 400 tons, principally English iron, which is for the account of various foundries. The price was close to $29, ex ship. A local dealer has just been advised that a large Pacific Coast interest is inquiring in England and on the Continent for 1000 tons of 3.75 to 4.25 per cent silicon iron, but that is virtually the only indication of activity at this time.

**Finished Iron and Steel.**—Although the market is subject to several disrupting influences, including the strikes and the intercoastal rate war, business in most lines continues satisfactory. This is the result of the fundamental soundness of conditions on the Coast, which have been showing steady improvement since the first of the year. Building in all sections of the State is reported distinctly above the normal, and various large enterprises, such as the oil industry, display steady expansion. Bars are holding pretty closely to the 2.55c. basis, but the heavy materials range from the Steel Corporation levels to about $7 per ton higher, according to the delivery. Galvanized sheets are being quoted from 3.15c. to 3.50c., Pittsburgh; black sheets from 4.15c. to 4.50c., and blue annealed from 2.40c. to 2.75c., while plates range from 2.30c. to around 2.40c., c. and f., Pacific Coast ports. Sheets have not been quite as active recently, but plates are moving freely, one mill having taken around 1000 tons in three or four lots in the past few days, and working on an inquiry for about 400 tons. A large interest has just been awarded 375 tons of black sheets. The Los Angeles market is reported active, with several good sized prospects in sight. An oil field contract, involving 4500 tons, has just been closed. The Government is expected to ask for bids next month on four sea-going dredges, which will require around 5500 tons of plates and shapes. The local agent of a Middle West mill has just been advised of an advance of $5 a ton on large rivets.

**Cast Iron Pipe.**—This is a rather quiet period, with the exception of soil pipe, which is in active demand, though comparatively little new business is being accepted. Prices appear to be holding firm at recent

(*Continued on page* 320)

# Prices Finished Iron and Steel, f.o.b. Pittsburgh

### Plates

Sheared, tank quality, base, per lb. .....1.70c. to 1.80c.

### Structural Material

Beams, channels, etc. .....1.70c. to 1.80c.

### Iron and Steel Bars

Soft steel bars, base, per lb. .....1.70c. to 1.80c.
Refined iron bars, base, per lb. .....2.25c.

### Hot-Rolled Flats

Hoops, base, per lb. .....2.50c. to 2.75c.
Bands, base, per lb. .....2.50c. to 2.75c.
Strips, base, per lb. .....2.50c. to 2.75c.
Cotton ties, per bundle of 45 lb. .....$1.11

### Cold-Finished Steels

Bars and shafting, base, per lb. .....2.10c.
Strips, base, per lb. .....4.00c.

### Wire Products

| | |
|---|---|
| Nails, base, per keg | $2.40 |
| Bright plain wire, base, per 100 lb. | 2.25 |
| Annealed fence wire, base, per 100 lb. | 2.25 |
| Galvanized wire, base, per 100 lb. | 2.75 |
| Galvanized barbed, base, per 100 lb. | 3.05 to 3.15 |
| Galvanized staples, base, per keg | 3.05 to 3.15 |
| Painted barbed wire, base, per 100 lb. | 2.55 to 2.65 |
| Polished staples, base, per keg | 2.55 to 2.65 |
| Cement coated nails, base, per count keg | 1.90 to 2.00 |

Woven fence, carloads .....73 per cent off list

### Bolts and Nuts

Machine bolts, small, rolled threads, 60, 10 and 10 per cent off list
Machine bolts, small, cut threads .....60 and 10 per cent off list
Machine bolts, larger and longer .....60 and 10 per cent off list
Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads. 60 and 10 per cent off list
Cut threads .....60 per cent off list
Longer and larger sizes .....60 per cent off list
Lag bolts .....60, 10 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads. ....50 and 10 per cent off list
Other style heads .....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.:
Smaller and shorter .....50 and 10 per cent off list
Larger and longer sizes .....50 and 10 per cent off list
Hot pressed square or hex. blank nuts .....$4.50 off list
Hot pressed nuts, tapped .....$4.50 off list
C.p.c. and t. sq. or hex. nuts, blank .....$4.50 off list
C.p.c. and t. sq. or hex. nuts, tapped .....$4.50 off list
Semi-finished hex. nuts:
9/16 in. and smaller, U. S. S. ....80 and 10 per cent off list
⅝ in. and larger, U. S. S. ..75 and 10 per cent off list
Small sizes, S. A. E. .....80, 10 and 10 per cent off list
S. A. E. ⅝ in. and larger. .75 and 10 and 10 per cent off list
Stove bolts in packages .....80 and 5 per cent off list
Stove bolts in bulk .....80, 5 and 2½ per cent off list
Tire bolts .....65 per cent off list
Track bolts in carloads .....3.00c. to 3.25c. base
Track bolts, less than 200 kegs .....3.50c. to 3.75c. base

### Cap and Set Screws

Milled square and hex. head cap screws, 75 and 10 per cent off list
Milled set screws .....75 per cent off list
Upset cap screws .....80 per cent off list
Upset set screws .....80 and 5 per cent off list

### Rivets

Large structural and ship rivets, base, per 100 lb. .....$2.65
Large boiler rivets, base, per 100 lb. .....2.75
Small rivets .....70 to 70 and 5 per cent off list

### Track Equipment

| | |
|---|---|
| Spikes, 9/16 in. and larger, base, per 100 lb. | $2.25 to $2.35 |
| Spikes, ½ in. and smaller, base, per 100 lb. | 2.50 to 2.60 |
| Spikes, boat and barge, base, per 100 lb. | 2.50 to 2.60 |
| Track bolts, base, per 100 lb. | 3.25 |
| Tie plates, per 100 lb. | 2.00 to 2.25 |
| Angle bars, base, per 100 lb. | 2.40 |

### Welded Pipe

*Butt Weld*

| *Steel* Inches | Black | Galv. | *Iron* Inches | Black | Galv. |
|---|---|---|---|---|---|
| ⅛ | 54½ | 28 | ¼ to ⅜ | + 3½ | +22½ |
| ¼ to ⅜ | 60 | 33½ | ½ | 36½ | 18½ |
| ½ | 65 | 50½ | ¾ | 42½ | 27½ |
| ¾ | 69 | 56½ | 1 to 1½ | 44½ | 29½ |
| 1 to 3 | 71 | 58½ | | | |

*Lap Weld*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 64 | 51½ | 2 | 39½ | 25½ |
| 2½ to 6 | 68 | 55½ | 2½ to 6 | 42½ | 29½ |
| 7 to 8 | 65 | 51½ | 7 to 12 | 40½ | 27½ |
| 9 to 12 | 64 | 50½ | | | |

*Butt Weld, extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| ⅛ | 50½ | 33 | ¼ to ⅜ | + 4½ | +37½ |
| ¼ to ⅜ | 56 | 38½ | ½ | 35½ | 23½ |
| ½ | 62 | 50½ | ¾ | 42½ | 28½ |
| ¾ | 67 | 55½ | 1 to 1½ | 44½ | 30½ |
| 1 to 1½ | 69 | 57½ | | | |
| 2 to 3 | 70 | 58½ | | | |

*Lap Weld, extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 62 | 50½ | 2 | 40½ | 27½ |
| 2½ to 4 | 66 | 54½ | 2½ to 4 | 43½ | 31½ |
| 4½ to 6 | 65 | 53½ | 4½ to 6 | 42½ | 30½ |
| 7 to 8 | 61 | 47½ | 7 to 8 | 35½ | 23½ |
| 9 to 12 | 55 | 41½ | 9 to 12 | 30½ | 18½ |

To the large jobbing trade the above discounts are increased by one point, with supplementary discounts of 5 and 2½ per cent.

### Boiler Tubes

| *Lap Welded Steel* | | *Charcoal Iron* | |
|---|---|---|---|
| 1¾ in. | 26½ | 1½ in. | 5 |
| 2 to 2¼ in. | 41 | 1¾ to 1⅞ in. | 15 |
| 2½ to 3 in. | 52 | 2 to 2¼ in. | 25 |
| 3¼ to 13 in. | 57 | 2½ to 3 in. | 30 |
| | | 3¼ to 4½ in. | 32 |

To large buyers of steel tubes a supplementary discount of 5 per cent is allowed.

*Standard Commercial Seamless Boiler Tubes*

Discounts on cold-drawn or hot-rolled tubes in carload lots, f.o.b. Pittsburgh, follow:

| | | | |
|---|---|---|---|
| 1 in. | 60 | 2½ and 2¾ in. | 43 |
| 1¼ and 1½ in. | 52 | 3 in. | 47 |
| 1¾ in. | 36 | 3¼ to 4 in. | 52 |
| 2 and 2¼ in. | 39 | 4¼ in. to 5 in. | 44 |

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

### Tin Plate

Standard cokes, per base box. .....$4.75

### Terne Plate

(Per package, 200-lb.)

| | | | |
|---|---|---|---|
| 8-lb. coating | $9.30 | 25-lb. coating I. C. | $14.25 |
| 8-lb. coating I. C. | 9.60 | 30-lb. coating I. C. | 15.25 |
| 15-lb. coating I. C. | 11.80 | 35-lb. coating I. C. | 16.25 |
| 20-lb. coating I. C. | 13.00 | 40-lb. coating I. C. | 17.25 |

### Sheets

*Blue Annealed*

Nos. 9 and 10 (base), per lb. .....2.40c. to 2.60c.

*Box Annealed, One Pass Cold Rolled*

No. 28 (base), per lb. .....3.15c. to 3.40c.

*Galvanized*

No. 28 (base), per lb. .....4.15c. to 4.40c.

*Tin-Mill Black Plate*

No. 28 (base), per lb. .....3.15c. to 3.40c.

Manufacturers have pamphlets, which can be had upon application, giving price differentials for gage and extras for length, width, shearing, etc.

## Freight Rates

All rail freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

| | | | | | |
|---|---|---|---|---|---|
| Philadelphia, domestic | $0.325 | Buffalo | $0.265 | St. Louis | $0.43 |
| Philadelphia, export | 0.265 | Cleveland | 0.215 | Kansas City | 0.735 |
| Baltimore, domestic | 0.315 | Cleveland, Youngstown Comb. | 0.19 | Kansas City (pipe) | 0.705 |
| Baltimore, export | 0.255 | Detroit | 0.295 | St. Paul | 0.595 |
| New York, domestic | 0.34 | Cincinnati | 0.295 | Omaha | 0.735 |
| New York, export | 0.285 | Indianapolis | 0.31 | Omaha (pipe) | 0.705 |
| Boston, domestic | 0.365 | Chicago | 0.34 | Denver | 1.275 |
| Boston, export | 0.285 | | | Denver (pipe) | 1.215 |

| | |
|---|---|
| Pacific Coast | $1.50 |
| Pac. Coast, ship plates | 1.20 |
| Birmingham | 0.69 |
| Memphis | 0.385 |
| Jacksonville, all rail | 0.50 |
| Jacksonville, rail and water | 0.415 |
| New Orleans | 0.515 |

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 60,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha, and Denver the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 30c. to 40c.; ship plates, 30c. to 40c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 30c. to 40c.; sheets and tin plates, steel rods, wire rope, cable and strands, 75c.; wire fencing, netting and stretcher, 50c.; pipe, not over 8 in. in diameter, 50c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

# British Iron and Steel Market

## American Coal Purchases Continue—America Has Bought 7,000 Tons of Rails and Is Inquiring for Tin Plate

*(By Cable)*

LONDON, ENGLAND, August 1.

Good quantities of British coal have been bought by America and the demand continues.

Pig iron is quiet and weaker. There have been further inquiries for 5000 tons of Scotch foundry iron to be sold for prompt delivery. The home demand is quiet. Hematite is weak and the demand sluggish. Stocks are accumulating and makers are granting concessions freely.

Coke is firmer on increased sales.

Steel prices are unchanged but the tendency is downward. It is anticipated that the home-trade price control will be dissolved before long. Australia and New Zealand are buying moderately, but other markets are quiet.

July output of the Clyde shipyards was 32,775 gross tons.

Continental material is in fair demand. India has bought sheets and plates. South America has bought merchant bars. America has secured 7000 tons of rails. Japan, China and Australia are purchasing wire meshing.

Tin plate is weak, with little business. Prompt position has sold at 19½s. ($4.33) basis, f.o.b. Sellers of September and October deliveries are asking 19¼s. ($4.27) basis, f.o.b. There is a good German demand and some works are filled up to the end of August. America is inquiring, but so far no actual orders have been placed.

Galvanized sheets are steady and business quiet. Japan is inquiring for thin-gage black sheets; also for sheets for galvanizing. India has bought a little.

We quote per gross ton, except where otherwise stated, f.o.b. maker's works, with American equivalent figured at $4.44 per £1, as follows:

| | | | | |
|---|---|---|---|---|
| Durham coke delivered | £1 | 6¾ | | $5.94 |
| Cleveland No. 1 foundry | 4 | 15 | | 21.09 |
| Cleveland No. 3 foundry | 4 | 8 | & 4 8* | 19.54 |
| Cleveland No. 4 foundry | 4 | 7½ | | 19.43 |
| Cleveland No. 4 forge | 4 | 5 | | 18.87 |
| Cleveland basic | 4 | 0 | & 4 0* | 17.76 |
| East Coast mixed | 4 | 11 | & 4 11* | 20.20 |
| Ferromanganese | 15 | 0 | | 66.60 |
| Ferromanganese* | 14 | 10 | to 14 15 | 64.38 to $65.49 |
| Rails, 60 lb. and up | 7 | 17½ | to 9 10 | 34.97 to 42.18 |
| Billets | 7 | 0 | to 8 0 | 31.08 to 35.52 |
| Sheet and tin plate bars, Welsh | 7 | 7½ | | 32.75 |
| Tin plates, base box | 0 | 19½ | to 0 19⅝ | 4.33 to 4.36 |
| | | | | C. per Lb. |
| Ship Plates | 9 | 0 | to 10 0 | 1.78 to 1.98 |
| Boiler plates | 13 | 0 | to 14 0 | 2.58 to 2.78 |
| Tees | 9 | 5 | to 10 10 | 1.83 to 2.08 |
| Channels | 8 | 10 | to 9 15 | 1.68 to 1.93 |
| Beams | 8 | 5 | to 10 0 | 1.64 to 1.98 |
| Round bars, ¾ to 3 in. | 9 | 5 | to 10 10 | 1.83 to 2.08 |
| Galvanized sheets, 24 g. | 16 | 0 | to 16 10 | 3.17 to 3.26 |
| Black sheets | 12 | 0 | | 2.38 |
| Steel hoops | 12 | 0 | & 12 5* | 2.38 & 2.43* |
| Cold rolled steel strip, 20 g. | 23 | 2½ | | 4.58 |
| Cotton ties, Indian specifications | 15 | 0 | | 2.97 |

*Export price.

## Continental Prices, All F. O. B. Channel Ports, Delivery as Specified

| | | | | |
|---|---|---|---|---|
| No. 3 foundry pig iron: | | | | |
| Belgium, August | £4 | 2½s. to £4 | 5s. | $18.32 to $18.87 |
| Luxumburg, August | 4 | 0 to 4 | 5 | 17.76 to 18.87 |
| France, August | 4 | 2½ to 4 | 5 | 18.52 to 18.87 |
| Billets: | | | | |
| France | 5 | 15 | | 25.53 |
| Luxemburg, July | 6 | 5 | | 27.75 |
| Lorraine, July | 6 | 5 | | 27.75 |
| Wire nails (keg basis): | | | | |
| Germany, August | 0 | 14½ | | 3.22 |
| Belgium, July | 0 | 20½ | | 4.55 |
| Wire rods, 5 mm. (0.2 in.): | | | | |
| Belgium, July | 7 | 5 to 10 | 7½ | 32.19 to 46.06 |
| Angles: | | | | |
| Belgium, September | 7 | 7½ | | 1.16 |
| Tees: | | | | |
| Belgium, July | 8 | 5 | | 1.64 |
| Merchant bars: | | | | |
| Belgium, October | 7 | 12½ to 7 | 15 | 1.53 to 1.54 |
| Luxemb'g, October | 7 | 15 | | 1.54 |
| Germany, October | 7 | 15 to 7 | 17½ | 1.54 to 1.56 |
| France, October | 7 | 17½ to 8 | 0 | 1.56 to 1.59 |
| Channels: | | | | |
| Belgium, July | 7 | 10 to 7 | 12½ | 1.42 to 1.51 |
| Joists (beams): | | | | |
| France, Sept. | 7 | 15 | | 1.54 |
| Belgium, Sept., Oct. | 7 | 2½ to 7 | 5 | 1.41 to 1.44 |
| Luxemburg, Sept. | 7 | 2½ to 7 | 5 | 1.41 to 1.44 |
| ⅜-in. plates: | | | | |
| Germany, Aug., Sept. | 7 | 15 to 8 | 5 | 1.54 to 1.64 |
| Belgium, Aug., Sept. | 7 | 17½ to 8 | 0 | 1.56 to 1.59 |
| Luxemburg and France, not offered. | | | | |
| ¼-in. plates: | | | | |
| Germany | 9 | 0 | | 1.78 |
| No. 8 gage wire: | | | | |
| Belgium, July, Aug. | 14 | 10⅝ | | 2.88 |

## Scrap Made of More Worth Than Salvage

The question when to scrap and when not to scrap, occurs with surprising frequency in demolition work. At times there is a very nice balance between the advantage of salvaging a piece of machinery or structural work and merely junking it. Since the development of cast iron cutting with oxy-acetylene the practice in this branch of demolition has undergone a very radical change, because it is now economical to reduce iron castings to charging box sizes in many instances where such a procedure could not have been considered even a couple of years ago. This is particularly true in the cutting up of very heavy iron castings such as are found in the mechanical equipment of power plants.

An interesting case in point is illustrated in the instance of a Chicago malting company that recently contracted with a scrap metal company to dismantle a power plant containing a large cast iron flywheel. Here the question arose as to whether it would be better to remove the flywheel in halves with a view to reassembling it as second-hand machinery, or to cut it up into such sections that it might be easily removed and broken into charging box sizes for sale as scrap. Salvaging would have required the erection of a heavy scaffold, because the roof of the power house was not strong enough to allow the removal of the halves by means of block and tackle unless some supplementary support was provided. This would probably have been the procedure before cast iron cutting with oxy-acetylene was developed, because it would have been impracticable to break up the flywheel in place.

In the case noted the cost of the scaffolding and labor for removal and salvage would have approximated so nearly the resale value of the flywheel that its reduction to scrap resulted in saving a considerable sum, even at the low price then obtaining for cast iron scrap. Eight cuts were made on the rim by means of Oxweld apparatus and one on each of the eight spokes. With the exception of the first cut on the rim, all were made by the contractor's own operator after witnessing the Oxweld service operator's demonstration.

One of the largest items of saving on the flywheel job mentioned was time, the scrapping operation being accomplished in hours against several days which would have been required to remove the parts for salvaging.

## Savings Bank Deposits

Reporting savings banks in the Second Federal Reserve District, New York, show an increase of 2.5 per cent in aggregate deposits in the month ended July 16, chiefly as a result of the crediting of interest on July 1.

Deposits of reporting banks in New York City in most cases made gains slightly larger than the amounts credited as interest.

Reporting banks in other cities, however, showed in general such narrow gains as to indicate that without interest payments aggregate deposits would have declined.

# NON-FERROUS METALS

## The Week's Prices

Cents Per Pound for Early Delivery

| | Copper, New York | | Straits Tin | Lead | | Zinc | |
|---|---|---|---|---|---|---|---|
| | Lake | Electrolytic* | New York | New York | St. Louis | New York | St. Louis |
| July 26 | 14.00 | 13.75 | 32.12½ | 5.75 | 5.40 | 6.35 | 6.00 |
| 27 | 14.00 | 13.75 | 32.80 | 5.75 | 5.40 | 6.45 | 6.10 |
| 28 | 14.12½ | 13.75 | 32.75 | 5.75 | 5.40 | 6.50 | 6.15 |
| 29 | 14.12½ | 13.75 | .... | 5.75 | 5.40 | 6.52½ | 6.17½ |
| 31 | 14.12½ | 13.75 | 32.62½ | 5.80 | 5.47½ | 6.55 | 6.20 |
| Aug. 1 | 14.12½ | 13.75 | 32.75 | 5.80 | 5.47½ | 6.60 | 6.25 |

*Refinery quotation.

## New York

NEW YORK, Aug. 1.

The price tendency is upward, and some of the markets are active. Buying of copper is fairly good with higher prices expected. The tin market is steady and only moderately active. The buying of lead has been heavy and prices slightly higher. Zinc continues its moderately rapid advance with demand good.

**Copper.**—Demand for electrolytic copper has been fairly good the past week, so much so that any shading of the 14c. delivered price has practically disappeared and some producers are quoting 14.12½c. There are indications that higher prices are confidently expected before the end of the week. Export business continues in sustained volume at increasing rather than diminishing prices. The fact that July has passed in the face of the coal and railroad strikes without any recession in prices is considered significant. There has also been continued depletion of stocks.

**Copper Averages.**—The average price of Lake copper for the month of July, based on daily quotations in THE IRON AGE, was 13.98c. The average price of electrolytic copper was 13.71c., refinery, or 13.96c. delivered.

**Tin.**—Moderate sales of Straits tin are reported during the past week, estimates placing the total at 500 to 700 tons, mostly future shipments, with dealers the most active participants. Considerable of the business was done below import cost, the London market being exceedingly strong. On one day 75 tons of August-September shipment from the East was sold at 32.50c., and on another day several lots of spot metal and of June-July shipment changed hands at 32.75c. The general trade is somewhat puzzled at the strength of the London market, which has advanced almost daily for the past 11 or 12 days. Quotations for to-day were £162 15s. for spot standard, £162 15s. for future standard and £163 10s. per ton for spot Straits, with heavy sales reported. Spot Straits tin to-day was quoted in the New York market at 32.75c. The monthly statistics for July are unusually interesting in that the deliveries into consumption were lower than expected, having been 4590 tons, as contrasted with estimated deliveries of at least 5500 tons. There was also an unexpected increase in stocks in store July 31, the total being 1791 tons, with the quantity landing on July 31 at 1825 tons. These figures indicate smaller consumption than expected. Imports for the first seven months of the year have been 34,895 tons, against 10,418 tons for the same seven months last year.

**Lead.**—A very large business has been done in this market, mostly for August delivery, and the tone is exceedingly strong. There has been no change in the quotations of the leading interest which remain at 5.55c., St. Louis, or 5.75c., New York, but the outside quotation is higher at New York, the producers asking 5.80c. Independent sellers, however, are lower than the leading interest at St. Louis, at 5.45c. to 5.50c.

**Zinc.**—The same factors which have prevailed for some little time continue to exert a strong influence in this market and prices continue to advance. Prime Western for early delivery is firm at 6.25c., St. Louis, or 6.60c., New York, at which levels sales were made yesterday and to-day. Brass special has sold at 6.37½c., St. Louis. The coal and railroad strikes continue to exert a deterrent influence on production, and stocks are rapidly diminishing. Information is also to the effect that stocks in England are at a low point, and the belief is strong that that country must sooner or later turn to American producers for some of their zinc requirements.

**Antimony.**—The market is quiet and unchanged at 5.25c. per lb. for wholesale lots for early delivery, duty paid, New York.

**Aluminum.**—The leading interest continues to quote 19.10c. per lb., f.o.b. producers' plant, for virgin metal, 98 to 99 per cent pure. Imported aluminum from dealers is offered at 17.75c. to 18c. for the same grade, New York, duty paid.

**Old Metals.**—Business was a little better this week as a result of a firmer market. Dealers' selling prices are as follows:

| | Cents Per Lb. |
|---|---|
| Copper, heavy and crucible | 13.50 |
| Copper, heavy and wire | 12.75 |
| Copper, light and bottoms | 11.00 |
| Heavy machine composition | 10.50 |
| Brass, heavy | 8.00 |
| Brass, light | 6.50 |
| No. 1 red brass or composition turnings | 8.75 |
| No. 1 yellow rod brass turnings | 7.50 |
| Lead, heavy | 5.00 |
| Lead, tea | 4.00 |
| Zinc | 3.75 |

## Chicago

Aug. 1.—Copper, tin, lead and zinc have advanced. Outside of copper there is an absence of endeavor to sell which has tended to strengthen the market. Tin has also been influenced by a strong bull movement in the London market. Sellers of spelter are confident because they feel that, though prices have advanced, idle smelters will not be able to resume operation on account of the pinch of the coal strike. Lead alone is in active demand after a quiet period. Some of the old metal grades have advanced in sympathy with the new metals. We quote, in carload lots, lake copper, 14.25c.; tin, 33.50c. to 34c.; lead, 5.50c.; spelter, 6.30c.; antimony, 7c.; in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bottoms, 9c.; red brass, 8.75c.; yellow brass, 6.75c.; lead pipe, 4.50c.; zinc, 3.25c.; pewter, No. 1, 20c.; tin foil, 22.50c.; block tin, 26c., all buying prices for less than carload lots.

## Expansion of Air Reduction Sales Co.

The Air Reduction Sales Co., Inc., has purchased plant sites and has begun the erection of additional plants. These include an Airco acetylene plant at Birmingham, an oxygen plant at Milwaukee, and an acetylene plant and a calorene plant at Pittsburgh, the last two augmenting a recently completed oxygen plant in the same city. Construction of the plant at Birmingham already has been begun. Facilities for producing oxygen from the air will also be enlarged in Buffalo and Minneapolis.

The completion of the new construction will bring the total number of the company's oxygen plants throughout the country up to 20, the acetylene plants to 11, and the calorene plants to 2. These are in addition to the air reduction apparatus plant in Jersey City, N. J., the recently acquired Davis-Bournonville apparatus plant, also in Jersey City, and the Ivanhoe, Va., plant of the National Carbide Corporation.

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The drawing room practice of the Taft Peirce Mfg. Co., Woonsocket, R. I., calls for bond paper for, say, tool drawings. The paper is purchased cut to size with the title blanks and border lines printed. Drawings are made in pencil, using ink only on the outline of the work and for the center lines, dimensions and notes. Blueprints are provided for the use of the shop and the original drawing kept in the files.

# PERSONAL

A. F. Knoblock has resigned as vice-president and works manager of the Cleveland Tractor Co., Cleveland, and his brother, H. Knoblock, has resigned as superintendent of that company. They plan to establish plants in Detroit, Cleveland, and other cities for the manufacture of transmission and timing gears for automobiles.

JOHN A. CAMM

John A. Camm, for several years the sales manager of Kearney & Trecker Corporation, manufacturer of milling machines, Milwaukee, became on Aug. 1 president of the Western Iron Stores Co., Milwaukee, dealer in machinery supplies. Mr. Camm has been associated with Kearney & Trecker for a considerable number of years, entering into the employ of that company in 1908 as superintendent. His experience in the sale and manufacture of machine tools dates from 1900, and previous to his connection with the Kearney & Trecker Corporation, he was general foreman of the Boye & Emmes Co., and previously foreman with other Cincinnati machine tool builders, among them being American Tool Works Co., R. K. LeBlond Machine Tool Co., and the Cincinnati Planer Co. In making his new connection Mr. Camm does not disassociate himself from the machine tool business, as he will continue to act in an advisory capacity for Kearney & Trecker Corporation.

E. R. Wiggins, formerly with the Chilton Co., Philadelphia, as technical editor of the Chilton *Tractor Journal*, has joined the sales department of the Holt Mfg. Co., Peoria, Ill., to do special work as sales engineer. He was formerly with the J. I. Case Threshing Machine Co., Racine, Wis.; Aultman & Taylor Machinery Co., Mansfield, Ohio; and Deere & Co., Moline, Ill., in their various engineering and experimental departments on tractor development.

W. L. Walker, formerly chief engineer of the Indianapolis Switch & Frog Co., Springfield, Ohio, and for the past four years assistant plant manager of the Ajax Forge Co., Chicago, has been appointed superintendent of the switch and frog department of the Buda Co., Harvey, Ill.

Bertram H. Lawrence, district engineer American Steel & Wire Co., Worcester, Mass., has been made chief engineer to succeed W. E. Snyder, Pittsburgh, who recently died. Matthew R. Fish, chief draughtsman, South Works, Worcester, succeeds Mr. Lawrence as district engineer. Mr. Lawrence will have charge of power and mechanical equipment, with headquarters at Pittsburgh, and will take up his duties this month. He originally was with the Chicago office of the company, and went to Worcester about seven years ago. His education as a mechanical engineer was received at the University of North Carolina.

Col. E. H. Havens has been made vice-president and general manager of the Locomobile Co. of America, Bridgeport, Conn. He was one of the receivers of the old Locomobile company prior to its being acquired by the Durant interests.

Joseph H. Swift, master mechanic, South Works, American Steel & Wire Co., Worcester, Mass., has been made chief draughtsman, to succeed Matthew R. Fish, who is now district engineer. Joseph Ashworth, shop foreman at the North Works succeeds Mr. Swift as master mechanic at the South Works.

W. S. Silpath, who has been made general manager of the Hub Wire Cloth & Wire Works Co., Boston, has been identified with the wire business 25 years, six years with the Buffalo Wire Works Co., Inc., the item regarding him in THE IRON AGE of July 27 being inaccurate.

C. A. Hintz has resigned his position with the Crucible Steel Co. of America to become Milwaukee manager of the Ziv Steel & Wire Co., Chicago, with offices at 201 University Building, Milwaukee.

E. W. Schultz, Sheboygan, Wis., president State Board of Vocational Education, and R. L. Cooley, director Central Continuation School, Milwaukee, will leave Aug. 15 for Europe to make a study of industrial training schools in England, France, Germany, Switzerland and Denmark.

Joseph G. Lawler, formerly sales manager of Louis Schlesinger, Inc., is now associated with the Van Wagoner-Linn Construction Co., New York, contracting electrical engineers.

Joseph Dhavernas, president United States Nickel Co., New Brunswick, N. J., has returned from an extended visit to Europe, having made an investigation of the business conditions with respect to nickel and its future.

Monroe L. Patzig, 206 Eleventh Street, Des Moines, Iowa, has been appointed representative of the Conveyors Corporation of America, Chicago, for the sale of the American trolley carrier. His territory lies in central Iowa.

A. L. Roberts, formerly master mechanic of the Lehigh Valley Railroad, and recently chief engineer of the Atlas Crucible Steel Co., has been appointed sales engineer, railroad department of the United Alloy Steel Corporation, Canton, Ohio.

A. M. Lindsley, chief engineer, Alvord Reamer & Tool Co., Millersburg, Pa., has been placed in charge of the advertising department of that company. He will continue his duties as chief engineer. Mr. Lindsley was formerly connected with the Cincinnati Milling Machine Co., Cincinnati.

S. P. Ker, Jr., Sharon, Pa., has been appointed general manager of sales of the Ashtabula Steel Co., Ashtabula, Ohio. The company is completing an eight-mill sheet plant, and expects to begin rolling in August. Mr. Ker is a son of Severn P. Ker, president of the Sharon Steel Hoop Co.

S. G. Gilfillan, president of the Belfont Iron Works Co., Ironton, Ohio, resigned at a recent meeting of the board of directors, and was made chairman of the board. He has been vice-president of the company for several years and has been a notable figure in the Hanging Rock iron district. C. Peebles, for many years managing head of the Ashland Steel Co., Ashland, Ky., which was recently taken over by the American Rolling Mill Co., has been elected to succeed Mr. Gilfillan as president of the company.

W. C. Durant has become identified with the Locomobile Co. of America as its active head. A 350 per cent advance in the price of Locomobile shares marked the arrival of this announcement on Wall Street.

Elbert H. Gary has accepted the chairmanship of the public safety committee of the Safety Institute of America, which with the help of 87 leaders in civic, industrial, social, educational and administrative circles, is to conduct an intensive public safety campaign. Judge Gary is generally credited with believing that the safety methods employed by the United States Steel Corporation, which it is estimated has saved 30,000 employees from serious injury in 14 years, could be adopted in large cities.

Dr. Colin G. Fink, consulting electrometallurgist, has been put in charge of the division of electrochemistry, department of chemical engineering, Columbia University, New York. He will continue his services as secretary of the American Electrochemical Society, office facilities having been arranged at Columbia for this purpose. The society's offices at Lehigh University will be discontinued after Aug. 1.

# FRENCH PRICES UNEVEN

## Market Slightly Unsettled—Export Activity—Pig Iron Weak—Less British Competition

*(By Special Correspondence)*

PARIS, FRANCE, July 20.—The French iron and steel market is in much the same situation as last week; quiet for inland sales, which is natural during the holiday season, but, notwithstanding the fall of the German mark, more active for export. Prices are well maintained in some items, show a sagging tendency in others and are on the whole rather unsettled.

The adjusted price of German coke delivered to French blast furnaces through the pooling agency of the Société des Cokes de Hauts-Fourneaux, has been raised from its present level of 93 fr. at Franco-German frontier to 97 fr. for August delivery. On the other hand, Germany is asking the Reparations Commission for a reduction of her present coal and coke deliveries to France. Lorraine iron works are, of course, normally depending upon German coke from the Ruhr for their supply, and if the German request were granted, they would have to procure French, Belgian or British coke at a much higher delivered price. Negotiations are now on between French and British companies for an exchange of British metallurgical coke for French iron ore, via French northern ports.

All this adds a regrettable element of uncertainty to the unfavorable conditions that the French iron and steel industry is laboring under: rising costs and falling prices. A substantial increase of production could alone improve this situation, but world economic conditions are, thus far, against it.

Of the 222 French blast furnaces, in May, 93 were in operation; 61 were under repair or in course of construction, and 68 were inactive.

**Iron Ore.**—Latest prices of French Eastern iron ore are as follows (per ton, at mine):

| Mining centers: | Fr. |
|---|---|
| Thionville (32 per cent) | 11 to 50 |
| Briey | 14 to 15 |
| Longwy | 9.50 to 14 |

**Pig Iron.**—Prices of foundry pig iron are still sagging, because of keen competition among producers. The current price for chill-cast pig iron No. 3 P. L. is 210 fr., but some orders were booked at 208 fr. and even 205 fr. If this price is contrasted with the price paid for coke by French Eastern iron works (97 fr. next month, which is equivalent to an average delivered price of 100 fr.), it will be readily seen that, at such a level, producers are undoubtedly losing money. One Lorraine producer is upholding the price of 215 to 220 fr., and another one (the Redange works, has decided to blow in its one blast furnace. Middlesbrough foundry iron No. 3 is now quoted 308 fr. f.o.t. Calais or Rouen.

Owing to the recent rise of British currency (which has now partly receded), the market for French hematite has lately been rather satisfactory, and a postponement of the application of the new import duty, 37.50 fr. per ton instead of 30 fr., was even contemplated. British East Coast hematite, mixed numbers, is worth now 91s. f.o.b., which is equivalent, with a 6s. freight rate and at the present rate of exchange, of 252.5 fr. to £1, to 254.6 fr. plus 30 fr. per ton of import duty and unloading expenses. The present prices of French hematite are as follows: In the zone of penetration of British hematite (Northwestern coast area), 295 to 305 fr.; in the Eastern area, 305 to 315 fr.; in the Center and Paris areas, 325 to 330 fr.

**Semi-Finished Steel.**—Although quieter, the market for semi-finished products is good, especially for export, and if fewer orders were lately booked from Germany, a few orders, on the other hand, were placed in Great Britain. Present inland prices average 290 fr. for ingots and 310 fr. for blooms, at Lorraine works.

**Beams.**—The Comptoir Sidérurgique bookings for beams during the month of June totaled close to 35,000 tons.

**Rails.**—The large orders for rails which were contemplated for some time by the French railroads have just been virtually awarded to the Comptoir Sidérurgique, the domestic selling association of French producers of rails and beams.

**Sheets and Plates.**—The situation of the sheet market is satisfactory. The British product is now out of competition and Belgian sheets are selling only in the frontier area. Orders booked by the French Comptoir des Tôles, which have been steadily increasing since April, show higher figures still for the first part of July.

**Rolled Merchant Iron.**—Less activity has caused a prolonged weakness of prices, which vary considerably according to specifications, time of delivery, etc. For instance, one Lorraine works has booked an order for 1000 tons at 425 fr., while another producer has accepted 407 fr. for a similar tonnage. For export, 410 to 415 fr. f.o.b. Antwerp was recently accepted. Delivery on medium and small shapes varies now from two to three months. Steel wire is now quoted at 450 to 470 fr. at Lorraine works. There is continued improvement in sales of castings.

## Western Iron Stores Co. Expansion

In connection with the election of John A. Camm to the presidency of the Western Iron Stores Co., 145-147 West Forty-seventh Street, Milwaukee, as referred to elsewhere in this issue, it is stated that the company will gradually enlarge its machine tool department and will deal extensively in metal-working equipment, production tools, etc. It has dealt in machine tools in a limited way for several years in connection with its business as a jobber and dealer in foundry and machine shop equipment and supplies, transmission appliances, fixtures, etc.

## Shipping Board Sale of Engines

WASHINGTON, Aug. 1.—The United States Shipping Board has sold 102 triple expansion marine engines at public auction for $155,850. They were bid in by dealers in scrap metal and others, as follows: Big Four Machinery & Salvage Co., Chicago; Guy Mason, Washington; Stock Yards Scrap Iron & Metal Co., Chicago; Federal Shipbuilding Co., New York; David Dick, Welland, Ont.; Henry A. Hitners Sons Co., Philadelphia; Kennecott Copper Co., New York; S. D. Ostrow, Erie, Pa.; John W. Sullivan, New York, and Daniel Kern, Portland, Ore.

# OBITUARY

CROWTHER TEAL, part owner and manager of the Rochester Barrel Machinery Co., Rochester, N. Y., died at his home Friday, July 21, after a brief illness which resulted from heart attack. He had been connected with the manufacture of barrel machinery since he came to this country from England 38 years ago.

SAMUEL H. CARPENTER, president and one of the directors of the Atlas Drop Forge Co., Lansing, Mich., died suddenly at his home July 26. He had been at the head of the Atlas company since it began in 1906.

HARRY I. WOOD, president Harry I. Wood Electric Co., Louisville, Ky., for 22 years, died July 25.

EDWARD LACEY BRAYTON, president of the Pelton Water Wheel Co., San Francisco, died July 21, at Piedmont, Cal. Mr. Brayton had much to do with the development of California water power.

D. D. ELLIOTT, general superintendent Joseph E. Thropp Co., Earlston, Pa., died at his home Monday morning, July 24. Starting with the Shwenberger Steel Corporation, then successively with the American Steel & Wire Co. at Cleveland, the Donora furnaces of the Steel Corporation, the Cambria Steel Co., Johnstown, Pa., then with the Joseph E. Thropp Co., Mr. Elliott has been connected with the iron and steel industry of this country for many years.

# IRON AND STEEL MARKETS

(*Continued from page* 314)

levels, that is, $50 for 6-in. and $54 for 4-in., delivered. Perhaps the best offering at present is that involving 1270 tons of 20-in. pipe for Seattle, the award on which is expected at the end of the current week. Deliveries are growing daily more difficult, and, under conditions, are very uncertain. Some mills are urging consumers to anticipate their spring needs at this time when demand is lighter.

**Coke.**—The best business of recent date involves the 1000 tons of coke on which several dealers and importers have been working. Keen competition brought out a low bid, around $15, c.i.f., but agents have just received advices from Europe indicating an advance of $3 per ton, which makes the market price about $17.50. The strikes have curtailed business in domestic coke to a marked extent, and buyers are showing more interest in foreign material. It is estimated that around 2000 tons have been sold for late August arrival at close to $17.50, ex ship, to the foundry trade in carload quantities, for the most part.

**Old Material.**—A fairly steady business continues in scrap, but it is not of great proportions at present. The Southern Pacific Company is still offering freely, and absorption is progressing slowly. Market prices rule steady at $10, or a little better, on heavy melting, per gross ton, delivered at consumers' plants, and firm at $22 on cast iron scrap, per net ton.

## Youngstown

YOUNGSTOWN, OHIO, Aug. 1. — Differing opinions prevail with respect to effect of the coal priority orders of the Interstate Commerce Commission. One group inclines to the belief that little coal will be available for industrial consumption, at least for duration of the coal miners' strike. Another group believes that the Government will seek to avert serious unemployment by giving industries enough fuel for at least partial operations.

Independents are hopeful that the priority order may start shipments held up on Southern carriers moving and that coal loaded prior to the order will not be diverted. Lack of motive power, however, is declared to be the principal deterrent toward the relief of congestion on roads tapping the Southern mining regions, from which coal for Youngstown and Pittsburgh district industries has moved in heavy tonnages since the middle of April.

In a general way, producers are largely out of the market. Efforts are being concentrated to meet obligations of regular customers, and mills are falling behind in this respect. One interest reports that it occasionally has some tonnage that can be sold when an order fits in with rolling schedules, but not otherwise.

Just how long non-integrated sheet rollers will be able to maintain schedules is a question, in view of the fact that they must purchase their sheet bar requirements on the market, and that such makers appear to be especially hard hit by the disorganization to transportation. First evidences of curtailment in semi-finished production appear this week, aside from the suspension July 15 of the Bessemer department of the Republic Iron & Steel Co. On slabs, billets and sheet bars, $35 is the ruling third quarter quotation.

Larger interests have as yet shown little disposition to mark up quotations, though advances above the nominal market ranging from $3 to $5 per ton have applied on sheets, strips and merchant steel bars. Not all independents have abandoned the quotations of the leading interest on the three grades of sheets, but little new business is being considered.

Producers, however, point out they cannot be expected to maintain current quotations based upon coal costs ranging from $2.50 to $3.50 per ton, when their fuel costs have jumped to $8 and $9 for new supplies. As yet comparatively little of this high-priced coal has entered into actual production costs, because of unwillingness of industrial buyers to pay these figures and inability of the roads to make deliveries. One interest in the district was recently asked $9.50 per ton for upward of 100 carloads of Kentucky coal, which would have cost $11.90 delivered. Some companies are buying steam coal in a small way to keep their boilers operating when their own reserves are exhausted.

In the Youngstown district, the Carnegie Steel Co. has been in more favorable operating position, from the standpoint of fuel supplies, than the independents. Its Ohio Works blast furnaces have received considerable coke from Lorain, enabling it to continue five of six stacks in operation. The Charleroi, Pa., plant of the Electric Alloy Steel Co. is operating on a normal basis. The company is receiving a large number of small orders, states an official, which necessitates frequent changing of the rolls and thus adds to the costs. Combination of the company with the Atlas Crucible Steel Co., Dunkirk, N. Y., as proposed, will give the merged interests five finishing mills, as compared with two now operated at Charleroi, one of which is also used for blooming mill purposes.

### Local Strike Developments

Belief prevails in traffic and industrial circles that the strike of railway shopmen will gradually wear itself out and that the men will drift back to work. In many cases shopmen have gone from one district and have accepted employment in another in the shops of another carrier; in others, shopmen who walked out willingly or unwillingly have left their own communities and accepted employment in shops in other districts operated by their employer.

In many cases skilled workmen have gone with equipment interests working on contracts for the carrier whose service the employee left. Railroads are concentrating their active forces on locomotive repairs, but the inadequacy of such work is evidenced by inability to handle heavy freight movements in normal volume. Less attention is being paid to car repairs.

In this district the railroads took immediate steps to prevent disorder, securing injunctions in federal court restraining striking employees from trespassing on the company's property or molesting or interfering with men who took their places. These writs of injunction were personally served on many of the striking shopmen, and as a result there has been comparatively little disturbance.

Two men have been arrested at New Castle charged with sabotage, but disorder has been of negligible proportions in this territory. As yet there has been little interference with outbound shipments of steel products. The Baltimore & Ohio railroad appears to be the most seriously affected of any of the trunk line carriers, in so far as its operations throughout this territory are concerned.

## Wire Saws for Marble Cutting

The use of wire for cutting slate and marble was recently discussed in *The Quarry and Surveyors' and Contractors' Journal*. The wire travels at about 12 miles per hour. It is made in lengths of from 220 to 880 yd., sometimes more, and in three diameters, 4 mm., 5 mm. and 6 mm., the lighter-gage wire being employed for yard sawing and the heavier for quarry work.

In a large working the cutting wire is sometimes driven by a pulley fixed on a countershaft which may drive one or more lines of cutting wire each with its own friction clutch so that each can be worked independently of the other.

The wire saw is referred to as a useful and economical machine, being cheap to operate, requiring little horsepower, and only occasional attention to see that sand and water are kept fed into the cut. They have been developed primarily for marble working, but can be easily adapted to slate cutting.

Attempts to use them for sandstone cutting did not apparently turn out well, because of the excessive wear on the wire. The original article describes the details of their installation.

## Railroad Steel Castings

(*Continued from page* 284)

13. In case of small orders for bolsters, truck sides, draft arms, yokes or castings weighing over 150 lb. where the size of the order and the available pattern and foundry equipment are such that not more than five castings can be cast in any one melt, the physical properties, as required in Section 8, will be determined from an extra or spare test coupon cast with and attached to some other casting of the same melt.

14. In the case of orders including only castings not exceeding 150 lb. in weight, a test to destruction of one casting from each 100 castings or smaller lot may be substituted for the tension tests, at the option of the inspector. This test shall show the material to be ductile, free from injurious defects and suitable for the purpose intended.

### Workmanship and Finish

15. The castings shall substantially conform to the sizes and shapes shown on the purchaser's drawings, and shall be made in a workmanlike manner.

16. (*a*) The castings shall be free from injurious defects.

(*b*) Minor defects which do not impair the strength of the castings may, with the approval of the inspector, be welded by an approved process. The defects shall first be cleaned out to solid metal; and, after welding, the castings shall be annealed, if required by the inspector.

### Marking

17. The manufacturer's name or indentification mark and the specified pattern number shall be cast on all castings. In addition, the month and year when made shall be cast on all bolsters, truck sides, frames, wheel centers, cylinders, and similar castings. The location and size of numbers shall be agreed upon by the manufacturer and the inspector. In accordance with the standard practice of the individual foundry to identify individual castings, a serial number may be cast or the melt number may be stamped on bolsters, truck sides, frames, wheel centers, cylinders and similiar castings as agreed upon by the manufacturer and the inspector. The melt number shall be legibly stamped on all other castings weighing over 150 lb.

### Inspection and Rejection

18. The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of castings ordered. The manufacturer shall afford the inspector without charge, all reasonable facilities to satisfy him that the castings are being furnished in accordance with these specifications. All tests (except check analyses) and inspection shall be made at the place of manufacture prior to shipment, unless otherwise specified, and shall be so conducted as not to interfere unnecessarily with the operation of the works.

19. (*a*) Unless otherwise specified, any rejection based on tests made in accordance with Section 7 shall be reported within five working days from the receipt of samples.

(*b*) Castings which show injurious defects subsequent to their acceptance at the manufacturer's works will be rejected and the manufacturer shall be notified.

20. Samples tested in accordance with Section 7, which represent rejected castings, shall be preserved for two weeks from the date of the test report. In case of dissatisfaction with the results of the tests, the manufacturer may make claim for a rehearing within that time.

# JUNE SHEET STATISTICS

## Unfilled Orders Mount When Production Falls Behind New Sales

Sheet sales for the month of June, as disclosed by the monthly report of the National Association of Sheet and Tin Plate Manufacturers to the Department of Commerce, gained substantially over those for May, amounting to 268,032 net tons as compared with 176,200 tons for the previous month. Production for June was 210,460 tons, or 57,572 tons less than the sales, while shipments were 203,023 tons or 65,009 tons less than the sales. Unfilled tonnage as of July 1, was 437,853 tons, an increase of 73,778 tons over the June 1, total. Finished stock on hand awaiting shipment as of July 1, was 77,251 tons as compared with 72,676 tons a month before and unsold stocks amounted to 21,609 tons as against 22,177 tons on June 1.

The total number of hot mills in the United States is 641, having a monthly capacity of 365,000 tons and the percentage of the capacity to which the figures are related is 67 per cent. June sales were 110 per cent of such capacity; production 86.4 per cent; shipments 83.3 per cent; unfilled orders 179.7 per cent; stocks awaiting shipment 31.7 per cent and unsold stocks 8.8 per cent.

The unfilled tonnage figures indicated obligations of the mills, upon whose reports the figures are based, as equal to about 1.8 months' capacity production, but if the unshipped and unsold stocks amounting to 98,860 tons are deducted, the net obligations of these mills drop to 338,993 tons, equal to about 1.72 months' capacity production. Capacity production is out of the question under existing coal, transportation and labor conditions, and based on the June production rate the unfilled orders constitute well over two months' output.

## Last Week's Coal Production

WASHINGTON, Aug. 1.—Whether it was only a coincidence or an immediate result, figures of the Geological Survey show that there was an increase of approximately 200,000 tons in the coal in the seventeenth week (July 24-29) of the strike which followed the invitation of the President to reopen the mines. The survey says that production that week ran at the rate of 3,900,000 tons as compared with 3,700,000 tons for the preceding week.

Production of anthracite coal remains practically zero. The increase in output of bituminous coal is attributed partly to more men at work in Pennsylvania, partly to improved car supply in Southern West Virginia, and partly to heavier shipments from Alabama. There was no indication of increased production in response to the invitation to reopen mines in any of the strongly organized districts. More coal is coming out of the former non-union fields of Pennsylvania, and a little more from the Fairmont and Kanawha districts of West Virginia, but the additional supply from these sources was not yet significant in comparison with the requirements of the country.

Loadings on Monday, July 24, totaled 13,083 cars, or 417 above the preceding Monday, but 3664 cars below the last Monday before the shopmen's strike. Loadings on Tuesday, July 25, were 11,861, on Wednesday, 11,383, and on Thursday, 11,760.

## Plant Operations in the Youngstown District

Extensions now being made to the plant of the Youngstown Boiler & Tank Co., Youngstown, Ohio, will be completed in August, according to President James P. Keene. An addition is being built to the main plant building, substantially increasing productive capacity. The company now has orders sufficient for four months' operations, and output will be increased immediately upon completion of the additional capacity. The company manufactures storage tanks in standard sizes, and is engaged in miscellaneous steel plate construction. It consumes annually about 25,000 tons of plates. Two new buildings, of steel construction, are being added, one 100 x 160 ft. and the other 30 x 120 ft.

## Wage Advance at Cambria Works

An advance in wages was made by the Midvale Steel & Ordnance Co. at its Cambria plants at Johnstown, Pa., effective Aug. 1. Common labor, which had been at 25 cents per hour, was advanced to 28½ cents per hour. At the Central Western plants of the Steel Corporation and of some other producers the basis for common labor has been for some time 30 cents per hour.

The Branford Brass Foundry Co., Inc., Branford, Conn., has completed its foundry and is ready to begin manufacturing in brass, aluminum and alloyed castings.

# UTILIZING THE SELLER

## Making the Manufacturer Prove His Goods—Inspection and Tests

BY JOHN J. RALPH

HAVING specialized in his line and made his living from it, the seller may be assumed to have a good knowledge of it. He knows the trade customs, the history of the product, what the general trend is along which advancement may be expected to come, and how and where it is usually used.

In the matter of grades he has definite information which the purchaser often has not. At times, cheaper grades may be used to better advantage than the expensive ones. At other times a few cents more spent for quality will cut the consumption materially.

An instance in which this is particularly true is in the paper line. Few have any real knowledge of the different kinds of paper and the grades, yet every concern in the country must buy paper and it should be exactly adapted to their needs. Here the seller must be relied upon.

The producer is usually in touch with alternative products. Jobbers are perfectly willing to quote on these and, if they can in any way be used, it will pay to get further information. These competitive lines mean much to the buyer and it pays to keep in touch with their development. For instance, in the electrical line, there is the development during the past ten years of synthetic rosin for insulating.

As the manufacturer has usually made careful studies of the possible developments and adaptation of his products, he stands ready to give this information. He comes into contact with many other users of his material and has been called in many times to tell why it did not give satisfactory results, or how the manufacturing treatment could be changed to attain the desired product. This has given him a training in the handling and overcoming of difficulties connected with it.

This information is of particular value in advance of the time of designing the product and settling the methods of manufacture. If work has reached that stage, it is necessary to struggle with the difficulties, but if they can be avoided in the design of product and equipment of shop, there will be a gratifying lack of trouble and a noticeable saving.

Information as to the probable trend of the market price and the probabilities of plentiful or restricted supply can best be obtained from the maker. The source may perhaps be tainted, for the interests of both parties are not exactly the same, but usually it is as unbiased as possible, for salesmen, if not sellers, have come to realize that only through strict honesty can they retain the respect of customers.

The delivery situation is often of much importance. After the experience of the past few years this has probably not been forgotten. Very often it is not realized that some goods, if not in stock, cannot be made up for some time. This is particularly the case where they are made on large machines, which must be specially set up for each particular size and kind of goods going through, and where the machine is used to turn out a whole line of goods, as is the case with rolled goods, and particularly in the steel mill.

### Co-operation

This is usually desired by the seller. Often the buyer does not care for it, not wishing to put himself under obligations, and partly because he does not wish the details of his business generally known. In some cases there is a disposition to recommend courses which would practically compel the buyer to continue buying the same kind of goods. At times there is great rivalry to have certain goods declared standard, as in architects' or government specifications.

This is usually considered to be legitimate business, but if there is realization that each knows his business and that the buyer is not willing to have all of his engineering and design work done for him, the attitude changes and there is a sincere desire to assist in obtaining the very best possible result in meeting the real needs.

The first contact is with the salesman and the sales organization. Their special duty is to sell the goods—the knowledge and design services are purely incidental. For this reason the sales department is filled with salesmen and the real engineer is somewhat of a novelty. There is a feeling that a man who knows his subject thoroughly and is a real expert is ordinarily a poor salesman.

Particularly with the larger concerns is it unusual to find men who are experts in the particular line in which one is interested. These men have to sell too many kinds of things in too many kinds of places to know their subject well. This is also true of jobbers' representatives.

It is then necessary to get all the information that the salesman has. This can usually best be done by calling in the man or men in the plant who are particularly interested in the product. It will probably not be long before the salesman is reduced to referring to "our factory man." If the best results are to be obtained, here is where care is to be used.

If the project does not warrant bringing on the factory representative or expert in person, it must be so put that he can obtain a particularly clear idea of just what is wanted. This is not easy. There are difficulties in just the pure use of words. Each trade and profession has particular meanings for even common words, which may easily cause difficulty.

Not every man has the ability to use the English language so that but one meaning can be read from what he has written. There are still less who can present a complete picture of any proposition. Much can be done with care and the use of such assistance as sketches, specifications, etc.

### Reaction on the Buyer's Organization

This information, gathered from perhaps a half dozen sources, and representing the very best of modern practice, is of supreme importance to the various departments of the buyer.

In the field of design it is necessary for the designer and the production department, and that they shall work together in co-operation to make the best use of it. Their aim is (first) to get out the most saleable product and (second) to make it as economically as is possible under the conditions.

This sounds elementary, but it is far from being a usual condition. In fact, it is novel to find a concern which makes provision for the general and systematic reception and use of information. In some of the smaller concerns it is possible to get right to the men who are responsible for the work, and they will gladly take it, in a verbal form, mainly, it is true, but it makes far more impression on them, for they are alert to find that which they may use.

### Discounting Seller's Information

No matter where information comes from, it must be carefully tested and checked to find (first) its accuracy and (second) its bearing on the problem in hand.

The salesman is usually a very optimistic individual. Accustomed to have his statements discounted, he embroiders them so that the final effect will be substantially accurate. He suffers from the feeling that the final responsibility is the buyer's and that his job is to get rid of the goods. It is, therefore, necessary to examine his information closely for absolute misstatements, for exaggerations and for mistakes. It is not unusual for the purchasing agent to obtain inaccurate impressions through his lack of exact familiarity with the goods. By focusing on this information the intelligence of the part of the organization involved, it is usually possible to get the facts and discover their bearing under the conditions considered.

There are methods of checking up that have not been used to the extent that they might be. Each of them is standard procedure in certain lines. The first is the systematic study of machines and materials in

other factories. It is seldom that other manufacturers, even competitors, will fail to give permission to study either machines or materials in their plants. Such a request is usually taken as a compliment. This gives one a chance to obtain an unbiased opinion and to find out the opinions of others. It is not, however, sufficient.

Our reputation as manufacturers of automotive equipment has gone out to the ends of the world. We have had visitors from all over the world who have carefully and closely checked the work in our various factories. These are very suave gentlemen and never fail to leave a plant without mentioning how efficient it is. They also never tell what they have seen that does not seem to them to be the best of practice. They would not be so presumptuous, and they have no wish to hurt anybody's feelings.

The standing wonder of all of these gentlemen is how, with access to no plants barred, two plants in the same city can each have crude processes in certain departments, while some other plant practically next door has worked out extremely efficient and economical methods of machining. To them it seems common sense for each to exchange their advanced ideas and both profit from the exchange.

### Experts

Large companies have on their staffs men who are experts in their special lines to whom such problems as may come up are referred. While these men work with the regular staff, they bring to the study special training and experience which is of great assistance. This is impossible to the small plant and they therefore work along without it, because they cannot afford to hire a whole line of experts.

There has developed during the past few years a body of men in independent practice who are experts in certain branches. But there is often a feeling that to call on them is an indictment of the staff. This is, of course, erroneous, for many things come up with every company which must be solved in a "rule of thumb" manner, or by the "cut and try" method, which, if turned over to a real expert, could be solved in the unusual manner that means profits.

### Testing

A fairly certain way, and one which must always be used eventually, is to test. It gives invaluable information which sometimes can be obtained in no other way. Large plants in highly technical lines have fully equipped testing departments through which it is possible to run tests which give absolute information on the machine or material under consideration. In others it is necessary to go to outside commercial laboratories.

These latter have not been used as much as they should be. Company after company is still working on "rule of thumb," where they should know exactly "where they are at." Many a company is still taking the sellers' word for the material he ships when, for a few dollars a month, it could have tests made which would give all of the characteristics of the material received. This would enable the company to plan intelligently to use it to the best advantage.

There is an interesting tendency to place development problems in the various engineering college laboratories. In these places there is often the best of talent, with an abundance of observing assistance from students. Their equipment in testing machinery is usually far more complete and of greater capacity than in the usual plant laboratory.

If the precaution is taken of stating the problem with exactness, supplying sufficient money so that the necessary work can be done, and starting the experiments in sufficient time, this is a very satisfactory method.

The producer's plant offers facilities, both in the way of talent and equipment, which sometimes is the only practical solution. This is particularly true of special machinery or products which it may not be possible to duplicate in any other place in the country. Because of their familiarity with the material, and other investigations they may have carried out in some lines, this is often the only satisfactory way to make tests.

## Chairman Schwab Discusses Bethlehem Company's Position

The Bethlehem Steel Corporation declared its regular quarterly dividends, payable Oct. 2, on both classes of common stock. Following a meeting of the board of directors, July 27, Charles M. Schwab, chairman of the board, described the outlook for improved business as encouraging. "The directors," he said, "concluded that the ability of the corporation to distribute accumulated earnings from its resources, due to conservative dividend policy during the period of large earnings, warranted the payment of the present dividend on the common stock."

Mr. Schwab said the building of additional open-hearth steel capacity to serve the plate, sheet and tin plate mills at the Sparrows Point plant is being planned. This is expected to add 300,000 tons annually to the company's capacity. He said further:

"Orders booked in the second quarter were much in excess of the first quarter and at gradually improving prices. Prices prevailing during the first quarter proved to be the lowest of the recent depression. Early in the second quarter a revived demand for steel developed, necessitating a rapid expansion of operations, which was accompanied by an increase in costs due largely to the high cost of fuel occasioned by the coal strike.

"The corporation's coal properties continued in operation during the quarter, but the difficulty of railroad movement under the present conditions has made it impossible to supply the corporation's full needs, necessitating some curtailment of operations.

"There has been an improvement in the inquiries for new ships, and the corporation has been able to secure some new business in that department. There has also been an increase in the amount of ship repair work. Our railroad passenger car business shows a much improved condition, capacity being taken for some time to come.

"The steel business for the next half of the year will be very much influenced by the duration of the coal and railroad strikes. There are large unfilled orders for steel, with substantial additional tonnage awaiting some assurance as to deliveries. Coupled with this there is a more general recognition of the necessity for a higher price basis for steel."

## National Safety Council Meets at Detroit

At the eleventh annual meeting of the council, to be held at the new Cass Technical High School, Detroit, Aug. 28 to Sept. 1, inclusive, a safety exhibit will be open from 9 a. m. to 6.30 p. m. each day of the meeting, closing at 6 p. m., Sept. 1. Mention of the principal papers before the metals section was made in THE IRON AGE, July 6, page 27. The paper on "The Safe Handling of Gas at the Blast Furnace" will be read by G. M. Hohl, superintendent of blast furnaces, Bethlehem Steel Co., Bethlehem, Pa. The paper on "Safety in Crane Repairing" will be read by E. E. Remington, assistant superintendent of maintenance, Ford Motor Co., Detroit.

At the joint meeting of the automotive, drop forge and metals sections, at 9.30 a. m., Sept. 1, three papers will be read, followed by informal discussion, led by R. A. Shaw, on how co-operation between sections can help reduce accidents. The papers are "Safety in Handling Material," by C. E. Ralston, Equitable Life Assurance Society, New York; "How the Plant Surgeon Can Help in Accident Prevention," by Dr. L. A. Shoudy, Bethlehem Steel Co., Bethlehem, Pa.; "Safe Practices in Acetylene and Oxygen Welding," by H. S. Smith, Prest-o-lite Co., New York.

Employees of the Bay State Metal Wheel Co., East Templeton, Mass., have had a 15 per cent cut in wages.

# Machinery Markets and News of the Works

## MARKET QUIET

### Few Lists Issued—Prospective Business in La Fayette Motors New Plant

### Shopmen's Strike Holding Up Pending Railroad Business—First Half of Month the Best

The market during the week was quiet. Among the few lists issued was that of the Wright Aeronautical Corporation, Newark, which is getting prices on 20 or 30 tools; though the inquiry has been circulated among dealers in used machines, there is the probability that good used tools will have the preference. Four special lathes for piston-ring work wanted by Eldege Chansse, New Bedford, Mass., stands out among the week's news items. The New York Central continues to send out inquiries but is not expected to buy until the strike is ended. In the Pittsburgh district a few lists were issued, chiefly for manual-training school equipment.

In prospective business the outstanding item of the week is equipment that will undoubtedly be required by the La Fayette Motors Corporation, Indianapolis, for its new plant being erected at Milwaukee. Plans call for a works three times the size of the company's Indianapolis shops.

The effect of the coal and shopmen's strikes is still felt, but the settlement of these disputes, it is believed, will show a marked increase in machine tool sales. This expectation is based largely on the volume of business pending which has been deferred on account of the strike. It is also felt that if the railroad operators agree to the proposal of the Railroad Labor Board to do outside contracting on repair work, several Eastern railroads, at least, will then doubtless begin immediate rehabilitation of their own repair shops.

In Milwaukee the automotive industries are by far the best source of new business, and in Chicago, Cincinnati and other centers, some buying by automobile builders is noted. Buying by industrial companies showed a falling off. Bookings for export to countries not in the market for several months was a bright spot of the week in Cincinnati. Special machinery manufacturers in Cincinnati are working full time, and in New England many shops are busier than in months, due to taking on railroad shop work.

In all centers July started out promisingly, the business being done indicating that it would be the best of many months. In the latter half, however, sales fell off, and for the most part the month will not exceed, if equal, June. In Pittsburgh and Milwaukee and in some classes of machinery sold by New England companies, activity in July is reported as greater than June.

## New York

NEW YORK, Aug. 1

THE machine-tool trade is looking forward to an early ending of the coal and railroad strikes in the confident belief that business will soon thereafter show a marked increase. This expectation is based on the volume of business pending, on which action has been deferred until labor troubles, with their possible disastrous consequences, are out of the way. July started out very promisingly, the business done in the first half indicating that it would be the best month since buying started on the upgrade. The latter half of the month, however, has been so beset with uncertainties that buyers have held off, and sales for the month will not exceed, if they equal, those of June.

Railroad buying should pick up soon after the strikes are settled, particularly if the carriers agree to the proposal of the Railroad Labor Board that they agree not to do outside contracting on repair work as one means of effecting a settlement. Several Eastern roads, which are alleged to have violated the Railroad Labor Board's decisions on outside contracting, will then doubtless begin the rehabilitation of their own repair shops. The New York Central continues to send out inquiries, but will do no buying until the strike is ended.

In the industrial field, the principal buying of the week was by the General Electric Co., Schenectady, N. Y., which placed orders for seven lathes and six shapers. The Wright Aeronautical Corporation, Newark,, has a list of 20 or 30 tools on which it is getting prices, the inquiry first having been circulated among dealers in used machines, with the probability that good used tools will have the preference.

About 20 tools have been bought by the Navy Department, Washington, for the Naval Air Station at San Diego, Cal.

Activity in both locomotive and overhead cranes is well sustained. There have been a few closings this week and a number of current inquiries are quite active. Among the companies now in the market for cranes are the Phoenix Utility Co., 71 Broadway, New York, which is asking prices on a 60-ton, 1-motor crane, 24-ft. span; the United States Cast Iron Pipe & Foundry Co., Burlington, N. J., inquiring for a 10-ton, 2-motor, ladle crane. The U. G. I. Contracting Co., Philadelphia, will probably issue an inquiry shortly for an overhead traveling crane. Among recent purchases are:

J. G. White Engineering Corporation, 43 Exchange Place, New York, a 60-ton, overhead traveling crane from the Niles-Bement-Pond Co.

Egleston Brothers & Co., 166 South Street, New York, a 3-ton, 1 motor overhead traveling crane from Niles-Bement-Pond Co.

Michigan Copper & Brass Co., Detroit, Mich., a 5-ton, 3-motor overhead traveling crane from Niles-Bement-Pond Co.

Viele-Blackwell & Buck, 49 Wall Street, New York, a 35-ton overhead traveling crane for use in Canada from Niles-Bement-Pond Co.

Phoenix Iron Co., Phoenixville, Pa., twelve 5-ton, 35-ft. 6-in. span electric traveling cranes from the Roeper Crane & Hoist Works.

Kleckhefer Container Co., Camden, N. J., a 5-ton,

42-ft. span, hand power crane from the Roeper Crane & Hoist Works.

Technical High School, Omaha, Neb., a 3-ton, 46-ft. span, hand power crane from the Roeper Crane & Hoist Works.

American Woolen Co., Boston, Mass., a 10,000-lb. grab-bucket hoist for coal handling at Baltic Mills, Enfield, N. H. from the Shepart Electric Crane & Hoist Co.

Newport News Shipbuilding & Dry Dock Co., Newport News, Va., twenty-one 2-ton floor operated, electric hoists, one 5-ton riveter hoist and one 5-ton, single I-beam trolley from the Shepard Electric Crane & Hoist Co.

Hampton Co., Kenilworth, Ky., two 20-ton used Brownhoist locomotive cranes with 1-cu. yd. buckets from Philip T. King, 30 Church Street, New York.

Whitehead & Kales, Detroit, Mich., a 40-ton, 70-ft. boom, used industrial locomotive crane from Philip T. King, 30 Church Street, New York.

Italian Art Granite Co., Tilden Avenue, Brooklyn, N. Y., a 5-ton, 50-ft. radius, hand power, jib crane from W. J. Shoebridge, 96 Schermerhorn Street, Brooklyn, N. Y.

American Foundry Equipment Co., York, Pa., two 1-ton hand power jib cranes from H. D. Conkey & Co., 149 Broadway, New York.

The New York Edison Co., 130 East Fifteenth Street, New York, will commence the immediate erection of a new one-story power house at Thirty-second Street and Madison Avenue, estimated to cost about $200,000, with equipment. William Whitehill, Buckley Newhall Building, Sixth Avenue and Forty-first Street, is architect.

The Transit Commission, 49 Lafayette Street, New York, is arranging for the purchase of about 60 acres on the Shell Road, Brooklyn, as a site for new repair and construction shops for the New York Municipal Railway.

The Burnham Boiler Corporation, Irvington-on-Hudson, N. Y., is arranging a list of equipment for installation in a foundry and machine shop at Lancaster, Pa.

The Havana Electric Railway, Light & Power Co., 55 Liberty Street, New York, a New Jersey corporation operating at Havana, Cuba, is disposing of a bond issue of $3,600,000, a portion of the proceeds to be used for power plant extensions and improvements. Frank Steinhart is president.

The Thirty-Sixth Street Garage Corporation, 256 West Thirty-sixth Street, New York, has awarded contract to Nisnewitz & Goldstein, 277 Broadway, for a three-story automobile service and repair building at 103-7 West 108th Street, 75 x 100 ft., estimated to cost $80,000. Bloch & Hesse, 18 East Forty-first Street, are architects.

The Metropolitan Material Co., 1335 Flushing Avenue, Brooklyn, is planning for the installation of several new boilers, each about 100 hp., and auxiliary equipment at its power house.

Robert J. Moorehead, 311 East 200th Street, New York, will take bids at once for a new automobile service and repair building at Sheridan Avenue and 162nd Street, estimated to cost about $75,000. Charles Kreymborg, 2534 Marion Avenue, is architect.

The Superintendent of Lighthouses, Staten Island, N. Y., will receive bids until Aug. 16, for approximately 315 tons of various size stud link and open link mooring chain, ¾-in. to 2 in. in diameter.

The Department of Public Works, Albany, N. Y., will soon commence the construction of new repair shops at Waterford, Pittsford and Baldwinsville, N. Y., estimated to cost about $100,000, including equipment. C. L. Cadle is superintendent of public works.

The Mexican Petroleum Co., Ltd., 120 Broadway, New York, will commence the immediate construction of a new oil refinery at Tampico, Mex., estimated to cost close to $2,000,000, including machinery.

Charles P. Barnes, Central Avenue, Albany, N. Y., has awarded contract to the William G. Sheehan Construction Co., 28 DeWitt Street, for a three-story automobile service and repair building, with machine shop, 66 x 165 ft., estimated to cost approximately $80,000.

Halliwell & Co., New York, manufacturers of electrical equipment, have leased a floor in the building at Fourth Avenue and Twelfth Street, totaling about 13,000 sq. ft., for a local plant.

A vocational department will be installed in the new high school to be erected at Riverhead, N. Y., on which work will commence at once. It will cost about $250,000.

Albert Kahn, 1000 Marquette Building, Detroit, architect, will take bids at once for part of the mechanical equipment to be installed in the new plant of the Ford Motor Co. at Green Island, N. Y., for which certain building contracts recently were let.

In connection with its new hydroelectric power plant at Crescent Dam, N. Y., for which preliminary work is in progress, the State Department of Public Works, Albany, will operate a drydock and general ship repair shop at Watervliet, N. Y., for the barge canal boats. Tentative plans are also under consideration for a second hydroelectric generating plant at Visscher Ferry, with initial capacity of about 5600 kw.

The Adirondack Power & Light Corporation, Amsterdam, N. Y., is arranging for an increase in capital from $23,100,000 to $25,000,000, a portion of the proceeds to be used for plant additions and improvements.

The Dubilier Condenser & Radio Corporation, 217 Centre Street, New York, manufacturer of wireless equipment, condensers, etc., has arranged for the immediate removal of its plant to 48 West Fourth Street, where space recently was leased approximately double the present floor area. Additional equipment will be installed for increase in capacity. William Dubilier is president.

The Harlem Valley Electric Co., New York, has been organized with a capital of $100,000, to construct and operate an electric plant and system in portions of Dutchess and Putnam counties. The company is headed by J. G. Deane and W. Cook, Jr., care of Deane & Cook, 15 Park Row, New York.

Fire, July 21, destroyed a portion of the plant of the Charles Leffler Co., 49-61 Clymer Place, Brooklyn, manufacturer of presses, tools, dies, etc. An official estimate of loss has not been announced.

Fire, July 24, destroyed a portion of the ice-manufacturing plant and power house of the Littlefield Ice & Coal Co., Line Street and the Philadelphia & Reading Railroad, Hammonton, N. J., with loss estimated at close to $27,000. It is planned to rebuild.

The Borough Council, Sayreville, N. J., will receive bids until Aug. 16 for a 100,000-gal. steel tank on a 60-ft. steel tower, as per plans and specifications by Waldo S. Coulter, 114 Liberty Street, New York, consulting engineer. Frank P. Kolb is borough clerk.

A vocational department will be installed in the high school to be erected at Lyndhurst, N. J., now under consideration by the Board of Education. It is estimated to cost about $125,000.

The Essex Foundry Co., Murray Street, Newark, N. J., manufacturer of cast iron pipe, etc., will build a one-story addition, 84 x 110 ft.

The Ward-Bennet Automobile Repair Co., Newark, has leased property at 235 Halsey Street, for the establishment of an automobile service and repair shop. Charles E. Ward and F. H. Bennet head the company.

Fire, July 24, caused by lightning, destroyed a portion of the power house at the plant of the Balbach Smelting & Refining Co., 580 Market Street, with loss reported at close to $18,000. It will be rebuilt. Emil E. Dieffenbach is general superintendent.

A machine repair shop, 31 x 57 ft., to cost about $22,000, will be constructed by the Brunswick Laundry, Jersey City, N. J., at its plant at 222 Tonnelle Avenue. George A. Flagg, 665 Newark Avenue, Jersey City, is architect.

The American Metal Moulding Co., 141 New Jersey Railroad Avenue, Newark, has awarded contract to Enstice Brothers, 111 Academy Street, for a two-story addition to its plant on Coit Street, Irvington district, estimated to cost about $25,000. Gustave A. Johnson is president.

## Philadelphia

PHILADELPHIA, July 31.

The Horn & Brannen Mfg. Co., 427 North Broad Street, Philadelphia, manufacturer of gas and electric fixtures, is arranging a list of equipment for its new plant at 1814-16 Spring Garden Street, recently acqpired, including drills, presses, automatic cut-off saws and other apparatus.

The Water Bureau, City Hall, Philadelphia, is planning to purchase two motor-driven pumps, capacity of about 4200 gal. per min. each. C. E. Davis is director.

The Willis-Sainte Claire Co., of Pennsylvania, 2033 Market Street, Philadelphia, has plans under way for a sixteeen-story and basement automobile service and repair building at 200 Broad Street, as a branch of the main plant of the company at Marysville, Mich. The William Steele & Sons Co., 1600 Arch Street, is architect and engineer. W. J. Foss is president.

Weston Dodson & Co., Inc., 1610 Spruce Street, Philadelphia, coal operator, has acquired the colliery of the Ship-

man Coal Co., near Shamokin, Pa., and contemplates extensions in the present plant, with hoisting, conveying and other operating machinery.

The Textile Machinery Co., Fourteenth Street, Chester, Pa., is reported to be arranging for the purchase of machine tools and other equipment, replacing that destroyed in a recent fire.

The Consumers Gas Co., Reading, Pa., a subsidiary of the United Gas Improvement Co., Broad and Arch streets, Philadelphia, has acquired local property as a site for a large soft coal gas manufacturing plant, with power house, machine shop and other operating departments, estimated to cost about $1,000,000, with equipment.

The Roberts & Mander Stove Co., Eleventh and Washington streets, Philadelphia, has awarded contract to the Austin Co., Bulletin Building, for a new two-story plant at Hatboro, Pa., 125 x 185 ft., estimated to cost about $50,000.

The Philadelphia Partition & Building Block Corporation, Medical Arts Building, Philadelphia, William Chapman, president, has completed plans for a new two-story factory, 100 x 200 ft., at Ritner and Twenty-eighth streets.

The National Biscuit Co., Tenth Avenue and Fifteenth Street, New York, has awarded contract to the Turner Construction Co., 1716 Sansom Street, Philadelphia, for a one-story automobile service and repair building, 130 x 184 ft., at Twelfth and Glenwood streets, Philadelphia, for company trucks and cars, estimated to cost about $55,000.

A power plant will be erected in connection with the twenty-story office building at Fifteenth and Chestnut streets, Philadelphia, estimated to cost about $4,000,000, for which plans have been completed by the Hoffman Henon Co., Finance Building, architects, for Albert H. Greenfield, owner.

The Freeman Electric Co., 803 East State Street, Trenton, N. J., will take bids at once for an addition to a one and three-story building at Mead and Prince streets, recently acquired, to be equipped as an assembling plant.

Nicholas W. Akimoff, Harrison Building, Philadelphia, mechanical engineer, has plans under way for a one and two-story factory, 100 x 500 ft., at Fifth and Water streets, Gloucester City, N. J., for the manufacture of Diesel engines and parts. A company headed by A. W. Grant and J. J. Y. McNally is being organized to operate the plant.

The West End Garage, West Hanover Street, Trenton, N. J., will build a two-story, brick and steel addition to its service and repair works. Harry C. Wood heads the company.

The Skillman Hardware Mfg. Co., West End Avenue, Trenton, N. J., will install two new presses and other equipment in its one-story addition, 32 x 60 ft., now in course of construction.

A vocational department will be installed in the new junior high school to be erected by the Board of Education, Camden, N. J., estimated to cost about $562,000. A site is benig selected in the vicinity of Park Boulevard and Euclid Avenue.

The Cadillac Automobile Co., 525 Market Street, Camden, N. J., is completing plans for a four-story service and repair building, 48 x 126 ft., estimated to cost about $100,000. Lackey & Hettel, 509 Federal Street, are architects.

The Lock Haven Electric Light & Power Co., Lock Haven, Pa., is planning for the erection of a new power house at Castanea, Pa. Bonds for $200,000 have been issued.

The Pennsylvania Wireless Mfg. Co., Inc., New Castle, Pa., is planning for the installation of machinery for the manufacture of radio equipment and parts, in a factory on Florence Avenue.

Harry K. Smith and John Minnich, Wrightsville, Pa., have construction under way on a factory to manufacture thermometers and other instruments. The equipment of the American Thermometer Co., Columbia, Pa., has been purchased and will be removed to the Wrightsville works. Other machinery will be installed and a company will be organized to operate the plant.

The Excelsior Coal Co., West Excelsior, near Sunbury, Pa., is considering rebuilding its coal washery destroyed by fire July 14.

The Board of Control, Scranton, Pa., will equip a new power plant for its institutions at Adams Avenue and Gibson Street, estimated to cost about $61,000. J. H. Williams, Administration Building, 425 Washington Avenue, is president.

The Merchants' Shipbuilding Corporation, Chester, Pa., is arranging to devote a portion of its plant to railroad car and locomotive repair work, and has negotiations under way for contracts of this character. R. H. M. Robinson is president.

The Glen Alden Coal Co., 306 Jefferson Avenue, Scranton, Pa., will build a one-story machine repair shop at its Woodward Colliery, near Wilkes-Barre, Pa.

## Chicago

CHICAGO, July 31.

WHILE July started with every promise of running ahead of June in machinery sales, with most of the trade it will fall somewhat behind, both in sales and values. The first half of the month was easily the best that the local trade has had since the revival in business, but the strike of the railroad car shopmen became quite effective in cutting off railroad buying the last two weeks. The Atchison, Topeka & Sante Fe Railroad had awarded by July 15 about half of the tools on a list issued several weeks ago and has not since made any additional purchases. Lists of the Union Pacific, Illinois Central and the Chicago, Burlington & Quincy have been dormant the past few weeks and are expected to remain so as long as the strike of the shopmen continues. Demands from other sources also have dwindled the past week or two, although some buying by automobile builders still is observed, and one company making an extension to its plant has put out an inquiry for a few tools. It is believed that the Studebaker Corporation has about completed the tool purchases for its latest extension. Dealers, while noting some falling off in new inquiries, report that they have lately booked a number of orders.

The Whiting Corporation, Harvey, Ill., has taken a 50-ton, 63-ft. span electric traveling crane for the Fort Dodge Gas & Electric Co., Fort Dodge, Iowa, placed through the United Light & Railways Co., Davenport, Iowa.

The Hyde-Schneider-Haley Mfg. Co., Ninth Street and Harrison Avenue, Rockford, Ill., recently incorporated with a capital of $60,000, will manufacture equipment for oil storage stations, such as pumps for unloading cars, valves and other oil specialties. It has purchased a factory and all of the necessary machinery. The officers are George S. Haley, president; Lester B. Hyde, vice-president, and Eduard A. Schneider, secretary-treasurer.

The National Tile Co., Anderson, Ind., has placed contract for a one-story addition, 85 x 496 ft., and contemplates further extensions to its plant.

The Calumet Tank & Mfg. Co., Hammond, Ind., will soon start work on a one-story foundry, 60 x 130 ft., to cost $75,000.

The Durand Steel Locker Co., 76 West Monroe Street, Chicago, has awarded contract to the Arnold Co., 105 South LaSalle Street, for a one-story addition to its plant at Chicago Heights, totaling about 25,000 sq. ft., estimated to cost $90,000.

The Southern Colorado Power Co., Pueblo, Col., has arranged for a bond issue of $6,000,000, a portion of the proceeds to be used for plant extensions and improvements.

The Northern States Power Co., 208 South LaSalle Street, Chicago, has made application for permission to construct and operate a hydroelectric power plant on the St. Croix River in the vicinity of Kettle Falls.

The United States Reclamation Service, Denver, Col., will receive bids until Sept. 6, for electrical machinery, including motors, transformers, switching apparatus, etc., for the valley drainage pumping plant, Yuma project, Ariz.; also until Aug. 21, for cast iron conduit linings for the Hubbart Dam, Flathead project, Mont. A. P. Davis, Washington, is director.

A vocational department will be installed in the two-story and basement high school, 100 x 120 ft., to be erected at Elkhart, Ill., estimated to cost about $90,000. F. J. Klein, 331 Main Street, Peoria, Ill., is architect.

The Bastian Blessing Co., 125 West Austin Avenue, Chicago, manufacturer of welding apparatus, has acquired the manufacturing end of the business of the St. Paul Welding & Mfg. Co., St. Paul, Minn., and will add a line of soldering equipment, trucks, etc., to its regular manufacture. The St. Paul company will act as a service branch in its locality.

The Brooks Mining Co., Louisville, Col., is planning to rebuild the tipple at its local mines, destroyed by fire July 22.

The Service Rubber Co., 401 Central Trust Building, Rock Island, Ill., has awarded contract to the Brissman Construction Co., 407 Moline Trust Savings Bank Building, Moline, Ill., for its three-story plant on Second Street, 60 x 300 ft., estimated to cost about $100,000, including machinery. J. T. Crowley heads the company.

The Fort Dodge Gas & Electric Co., Fort Dodge, Iowa, will commence construction late in August for a new electric generating plant with initial capacity of about 5000 kw.

estimated to cost $500,000, with machinery. B. J. Denman is chief engineer; Mark Anderson is general manager.

The City Council, Shelbyville, Ill., is arranging a special election to vote bonds for $100,000 for the construction of a municipal electric power plant. Fuller & Beard, Chemical Building, St. Louis, are engineers.

The Davenport Ice Co., 114 Myrtle Street, Davenport, Iowa, has preliminary plans for a new ice-manufacturing plant. The George B. Bright Co., 103 Marquette Building, Detroit, is engineer. George Albrecht is president.

The W. H. Maze Co., Peru, Ill., manufacturer of nails, etc., has awarded contract to the Austin Co., 208 South LaSalle Street, Chicago, for a one-story addition, 75 x 140 ft., estimated to cost about $65,000.

Fire, July 21, destroyed a portion of the plant of the Mulholland Brothers Silverplate Co., Aurora, Ill., with loss approximating $200,000.

## Buffalo

BUFFALO, July 31.

The Lockport Foundries Corporation, Lockport, N. Y., has plans under way for additions. It has acquired control of the Jefferson Union Co., Lexington, Mass., manufacturer of pipe unions, etc., and plans to increase the local works to accommodate this branch of manufacture. Robert E. Bryant is treasurer and general manager.

The Swan Garage, Inc., Ellicott Square, Buffalo, is completing plans for a new three-story automobile service and repair works, 90 x 115 ft. Kidd & Kidd, 232 Delaware Avenue, are architects. C. J. Irwin is president.

The Angert Auto Parts Co., 601 Bailey Avenue, Buffalo, is planning for the installation of machinery to manufacture automobile motors, parts, etc. S. Angert is president.

A vocation department will be installed in the new high school to be erected at Bath, N. Y., estimated to cost about $220,000. Palmer, Rogers & Smith, 101 Park Avenue, New York, are architects.

Fire, July 22, destroyed a portion of the works of the Broadalbin Light & Power Co., Broadalbin, N. Y. with loss estimated at $25,000.

The plant and property of the Ericsson Mfg. Co., 1100 Military Road, Buffalo, manufacturer of magnetos, ignition equipment, etc., has been acquired at receiver's sale by Edward L. Jellinek, Prudential Building, for $250,000. The purchaser represented certain stockholders of the company. It is said that reorganization plans will be perfected in the near future and the plant placed in service.

The Ramp Garage, Inc., Buffalo, recently organized with a capital of $1,500,000, has plans nearing completion for a new six-story automobile service and repair building at South Elmwood Avenue and West Mohawk Street, estimated to cost about $500,000. The company is headed by Robert Allen, Charles A. Klocke and Harry N. Kraft.

The Twin Filter Co., Buffalo, is planning for the installation of equipment to manufacture water filters. G. W. Barker, 78 Tioga Street, one of the heads of the company, is in charge.

The Elmira Water, Light & Railway Co., Elmira, N. Y., will make extensions and improvements in its plant and system to cost about $350,000. Bids will soon be asked on machinery, cooling equipment and other operating apparatus. F. H. Hill is general manager.

Power plant extensions will be made by the Jamestown Worsted Mills, Inc., Jamestown, N. Y., in connection with other mill improvements, to include new pumping machinery, condensers, ash-handling equipment, etc. The entire work will cost in excess of $100,000. Lockwood, Greene & Co., Hanna Building, Cleveland, are architects and engineers.

The Board of Education, Dunkirk, N. Y., will receive bids until Aug. 14 for machinery, tools and other equipment for the local vocational schools.

The State School for Metal Defectives, Rome, N. Y., is taking bids until Aug. 7 for engines, motor-generators and auxiliary equipment for the power and lighting plant. C. J. Severance is president.

A vocational department will be installed in the new three-story high school to be erected at Sinclairville, N. Y., 55 x 103 ft., estimated to cost about $75,000, exclusive of equipment. Beck & Tinkham, 317 Washington Street, Jamestown, N. Y., are architects.

The Jamestown Malleable Products Co., Tiffany Avenue, Jamestown, N. Y., is planning for the installation of equipment, including annealing ovens, etc. H. E. Kies is general manager.

The Morse Chain Co., Ithaca, N. Y., plans to erect new works in Detroit. It recently completed its power plant in Ithaca, changing from direct to alternating current, also adding 1000 hp. in Babcock & Wilcox boilers and 2300 kva. to the electric equipment.

## New England

BOSTON, July 31.

THE July New England machine-tool market closed quietly. No new business of importance developed the last week, while sales were confined to a very few new and used tools, which in the aggregate represented a small investment. Large industries contemplating purchases of machinery have deferred action until the railroad and coal labor atmosphere is clearer. Sales included a new 15-in. Hendey shaper to the Rhode Island Braiding Machine Co., Providence; new bench drill equipment to George Knight & Co., Brockton, Mass.; a 14-in. x 6-ft. lathe, 16-in. shaper and a No. 2 universal milling machine, used tools, to a South Boston manufacturer, and other individual used tools of small value. Bids are in for Boston's school list, but no award has been made. The largest new inquiry is for four special lathes wanted by Eldege Chansse, North Front Street, New Bedford, for piston ring work.

Local representatives of makers of heavy machinery state that July was the best month this year, but reports by dealers handling used and new equipment and second-hand machine tool houses are quite contrary. Several machine tool builders in New England are busier than in months, due to taking on railroad shop work, it being necessary in some instances to hire extra machinists. Such activity, together with indications of the textile industry slowly overcoming labor troubles, is the basis for a better feeling among makers and sellers of metal-working equipment. While advances in prices are lacking, machinery values are firmer as few sellers are willing to give extra discounts to secure business.

The Boston Supply Department, City Hall Annex, has taken bids on a fairly large turbine driven feed pump for the city hospital.

Bids have closed on a one-story, 60 x 140 ft. sales and service station to be erected on Highland Avenue, Somerville, Mass., by H. A. Steeves, Carleton Road, Belmont, Mass.

Plans are being prepared for a three-story building to house the mechanical department of the Woonsocket *Daily Call*, Woonsocket, R. I.

Articles of association have been filed by the Mastercrafts' Corporation, Brattleboro, Vt. It owns patents on an electrical windshield cleaner, and has awarded a contract for 100,000 with an Elbridge, N. Y., concern. Present plans are to eventually manufacture the device at Brattleboro. W. E. Stellman, Stellman Machine Shop, that city, is interested in the company.

The Hollander Brothers Co., 360 George Street, Bridgeport, Conn., manufacturer of sheet metal goods, has purchased a factory on Barnum Avenue, formerly occupied by the Columbia Graphophone Mfg. Co. The building contains 30,000 sq. ft. of floor space, and the property extends along the east end freight yards of the New York & New Haven Railroad. Henry Hollander, president of the company, states that about $10,000 would be expended in remodeling the structure.

The McCathron Boiler Works, 72 Knowlton Street, Bridgeport, Conn., is in the market for an air compressor.

The New York, New Haven & Hartford Railroad Co. will lease the war-time plants of the Groton Iron Works, Groton, Conn., and employ about 700 men. An official of the company stated that "inability to get certain grades of work done at the New Haven repair shops caused the move."

The Specialty Bolt & Rivet Works, 132 Hillside Avenue, Shelton, Conn., is planning for the installation of new machine tools, including surface grinder, threading machine, etc.

Fire, July 24, destroyed a portion of the shops, engine house and other property of the Rutland Railroad Co., Rutland, Vt., at Alburg, Vt., with loss reported in excess of $175,000.

The Winsted Gas Co., Winsted, Conn., will build a new hydroelectric power plant at Robertsville Falls, to replace a present power house. Two new water-wheels, generators and auxiliary electrical machinery will be installed.

The Hayes-Meserole Mfg. Co., Milford, Conn., recently

organized with a capital of $100,000 to manufacture wire products, has leased a portion of the plant of the United States Rubber Co.

J. L. Anthony & Co., Providence, R. I., manufacturers of jewelers' findings, etc., have removed to their new plant at 115 Baker Street, where additional equipment will be provided for increased output.

The Central Maine Power Co., Augusta, Me., will issue preferred stock for $289,855, the proceeds to be used for extensions and improvements in power plants and system.

A vocational department will be installed in the new three-story high school to be erected at Sawyer Road and Colon Street, Beverly, Mass., estimated to cost about $750,000. Adden & Parker, 177 State Street, Boston, are architects.

The New England Collapsible Tube Co., New London, Conn., has leased a three-story building, 50 x 100 ft., at 3132-34 South Canal Street, Chicago, for a Western branch works.

The Fairfield Battery Co., East Norwalk, Conn., has tentative plans for rebuilding its plant on Kaiser Place, partially destroyed by fire July 21, with loss estimated at about $40,000, including equipment. The company is also known as the Hi-Po Battery Co.

Lynnfield Damon, Jr., Hull, Mass., care of Bradford Weston, Allerton, Mass., contractor, will commence the immediate erection of a new one-story automobile service and repair shop, 95 x 110 ft., on Atlantic Avenue, Nantasket, Mass.

The United Electric Railways Co., Providence, R. I., has had plans prepared for a one and two-story automobile service and repair plant, 88 x 250 ft., at Melrose and Russell streets, for company motor trucks and buses.

A vocational department will be installed in the three-story high school, 80 x 153 ft., with extension, 60 x 65 ft., to be erected at Belfast, Me., for which bids on a general contract are being received. Kilham, Hopkins & Greeley, 9 Park Street, Boston, are architects.

## Cincinnati

CINCINNATI, July 31.

THE rail and coal strikes have somewhat affected the machine tool industry. It was expected that railroads with lists out would place large orders during July, but buying from this source has been confined to tools absolutely needed. How much some roads are in need of equipment was illustrated the past week when instructions were received by a number of local manufacturers to ship tools on order as soon as completed. Buying from industrial concerns showed a falling off, but a number of orders from the automotive industries were taken by local builders.

Perhaps the brightest spot in the trade is the receipt of several export orders. This business does not amount to a large volume, but is interesting from the fact that the orders are the first to be booked from several countries for many months. Sweden, Japan, Argentina, Brazil and the Philippine Islands were among the countries which bought tools the past week. Canada continues to take a fair number, both for domestic needs and for export, particularly to South American countries.

Special machinery manufacturers are working practically full time, and some have been forced to turn down orders for their regular lines on account of not being able to make deliveries wanted. Dealers report a fair demand for used tools, with better prices being secured.

The Erie Railroad is planning to consolidate the shop, roundhouse and terminal facilities of the Kent, Marion and Cincinnati divisions of the road at Marion, Ohio, and will spend approximately $750,000 for new buildings, according to an announcement by railroad officials at Marion this week.

The Ideal Concrete Machinery Co., Cincinnati, has awarded contract for a new factory on Spring Grove Avenue to the W. F. McConnell Construction Co., work to commence immediately. It manufactures tumbling barrels and concrete mixing machinery.

The Cynthiana Carriage Co., Cynthiana, Ky., will move its head office and main plant to Covington, Ky., in the near future. A definite location has not been secured, but it is likely that the company will erect a new plant. J. W. Leek, Cynthiana, is president and treasurer.

## Pittsburgh

PITTSBURGH, July 31.

ALTHOUGH only a few machine tool lists are coming out in this district, and these chiefly for manual training schools, sales and inquiries are satisfactory. Several local dealers state that their sales for July will exceed those for June which in turn showed improvement over May. This record has been built up chiefly on sales of individual tools. Some dealers who have been going among possible buyers instead of waiting for the buyers to come to them, are figuring on more prospective business than in many months. There has been a considerable change of opinion with regard to stocks of new and used machinery in the past few months. Earlier in the year it was thought that manufacturers' stocks were so large and so many good used tools were available that the machine-tool trade could not well hope for normally good times until 1923. But this view does not, in the light of the betterment in business over the past few months, find much support now.

Pittsburgh seems less affected by the coal mine and railroad labor troubles than some other parts of the country, as two of the principal rail arteries of the city claim to be operating 100 per cent and thus far have not found it necessary to put into effect the coal priority system. They are delivering and not confiscating coal, which is helpful to plant operations here. At the same time, not many machine-tool orders are being placed by the railroads.

New crane inquiries have not been especially numerous the past week, but local offices have many prospective orders, among them seven 3-ton floor control cranes and two 10-ton cab control cranes for an Ohio machine tool manufacturer. It is expected that a Pittsburgh district sheet maker this week will close for a couple of cranes, one of 50 tons capacity and the other 15 tons. A steel maker in this district recently broke ground for an addition and is expected to buy some mill type cranes. The Graham Bolt & Nut Co., Pittsburgh, recently closed for a 10-ton crane with the Pawling & Harnischfeger Co.

The Du Roth Steel Truck & Car Wheel Co., 611 Keystone Building, Pittsburgh, has plans nearing completion for new works at Osgood, Pa., estimated to cost in excess of $800,000, including equipment. C. Edward Long, 1202 Peoples' Bank Building, is engineer.

The Clarion River Power Co., Foxburg, Pa., C. B. Hawley, 450 Munsey Trust Building, Washington, in charge, has made application for permission to construct and operate three hydroelectric power plants on the Clarion River. One will be located in the vicinity of Beaver; another near Mill Creek; and the third near Foxburg. The company is operated by the Penn Public Service Co., Johnstown, Pa., F. T. Hepburn, president.

The Duquesne Light Co., 435 Sixth Street, Pittsburgh, is organizing the Bellevue Light Co., as a subsidiary, to take over and operate the property of the Southern Heat, Light & Power Co., North Boroughs section. Extensions and improvements are planned.

The Board of Education, Farrell, Pa., is arranging a list of machine tools, bench tools and wood-working machinery for the vocational department of the new school.

The Warren Steel Car Co., Starbrick, Pa., will commence the immediate erection of a new one-story plant, 90 x 260 ft., to replace the portion of its works recently destroyed by fire. It will cost about $75,000. W. W. Muir is president.

Fire, July 20, destroyed the box factory, wood-working shop and other mechanical departments at the plant of the American Window Glass Co., Arnold, Pa., with loss estimated at about $180,000, including machinery. It is planned to rebuild.

The Atlantic Refining Co., Fifty-sixth and Butler streets, Pittsburgh, is planning for an addition to its local oil refinery. Headquarters of the company are at 3144 Passyunk Avenue, Philadelphia.

The Kennedy Township Light Co. and the Neville Township Light Co., are being organized under State laws by C. P. Morrison, E. P. Griffiths and J. R. McNary, 435 Sixth Ave-

nue, Pittsburgh, to install and operate electric light and power plants and systems in Kennedy and Neville townships.

The West Penn Power Co., West Penn Building, Pittsburgh, is planning to rebuild the portion of its power house at Vandergrift, Pa., destroyed by fire July 23 with loss estimated at about $25,000.

The Coal Valley Machine & Electric Co., Montgomery, W. Va., has awarded contract to C. H. Williamson & Co., Montgomery, for a new plant, 50 x 100 ft., to manufacture mine cars and other iron and steel products. The company has a 2-acre site and will erect other buildings later. E. R. Howery is secretary.

The J. G. Dickson Co., Pittsburgh, manufacturer of metal products, has removed its plant from 241 South Main Street to 317 South Main Street, where larger space will be provided for increase in output.

The Hornor Brothers Co., Clarksburg, W. Va., is planning the erection of a new ice-manufacturing plant at Shinnston, W. Va., estimated to cost close to $35,000.

A vocational department will be installed in the two-story and basement high school, 103 x 128 ft., to be erected at Wayne, W. Va., estimated to cost about $180,000, on which work will commence at once. Holmboe & Pogue, Empire Bank Building, Clarksburg, W. Va., are architects.

The F. A. Jones Stone Co., 616 Forest Avenue, Zanesville, Ohio, is planning the equipment of a stone quarry plant at Martinsburg, W. Va. It has a tract of about 40 acres.

## Cleveland

CLEVELAND, July 31.

WHILE reports vary as to the volume of machinery business, several local dealers are getting a fair number of orders and some are working on many small lot inquiries and, in fact, have more live prospects than for several weeks. On the whole the market appears to be fully as active as at any time in the past few weeks and July sales evidently will be equal to those of June. Railroad inquiries and orders have entirely disappeared as a result of the shopmen's strike. The inquiries coming out are from well scattered sources, but largely from the automobile and parts manufacturers and some industries more or less closely allied to the automobile trade. Detroit automobile manufacturers continue to place small lots orders that in the aggregate amount to considerable business. The demand at present is largely for new machinery.

The Apex Electrical Mfg. Co., manufacturer of washing machines and other electrical household appliances has acquired the plant of the Cleveland Smelting & Refining Co., on Bessemer Avenue, and will install a foundry in a section of the plant and use other portions for the manufacture of motors.

The Brass & Aluminum Products Co., 5119 Euclid Avenue, Cleveland, has acquired a one story brick building, 66 x 180 ft., at 7708 Quincy Avenue and will move to this location shortly. It manufactures automobile hardware and oil and grease cups. Some new equipment will probably be installed.

The Kranz Mfg. Co., Brooklyn, N. Y., a subsidiary of the Westinghouse Electric & Mfg. Co., and manufacturer of safety switches, will move its plant to Mansfield, Ohio, and locate in the building of the Westinghouse Electric Products Co.

The Weldless Tube Co., Wooster, Ohio, has placed orders for equipment for its new plant, now under construction. It will consist of a main building, 110 x 500 ft. and an annealing and pickling department, 50 x 110 ft. A piercing mill, other mill equipment and draw benches will be furnished by the Woodard Machine Co., Wooster, and some other equipment by the A. Garrison Foundry Co. The General Electric Co. will supply the electrical equipment and the Alliance Machine Co. four electric traveling cranes. It is expected to have the plant completed about Oct. 1. The company has recently increased its capital stock to $1,000,000.

The K-W Brick Co., Warren, Ohio, has been incorporated with a capital stock of $150,000 and will build a plant to manufacture slag brick from slag supplied by the Trumbull-Cliffs blast furnace. J. Whittaker is president, and Robert W. Swift, secretary and general manager.

The Ohio Pumping Machinery Co., Akron, Ohio, which will move its business from Fitchburg, Mass., to Akron, plans the erection of a foundry and machine shop.

The Pederson Machine Co., Mansfield, Ohio, has been organized to manufacture umbrellas and will establish a plant in a building formerly occupied by the Ideal Electric & Mfg. Co.

The F. A. Colman Co., Cleveland, has recently taken orders for four core ovens for the Owosso, Mich., plant of the American Malleable Co., four core ovens for the Flint Foundry Co., and several ovens for the Apex Electric Mfg. Co., Cleveland.

### Catalogs Wanted

The Broden & Dailey Construction Co., engineer and builder, room 411 Union Building, 1836 Euclid Avenue, Cleveland, has recently opened an office and desires manufacturers' catalogs.

## Baltimore

BALTIMORE, July 31.

Unger & Mahon, Inc., Pratt and Gay streets, Baltimore, engineer, operating a marine railroad and other shipyard properties, has plans under way for a new one-story ship repair plant in the Sparrows Point district, estimated to cost about $50,000. F. W. Unger is president.

The Office of the Purchasing Agent, Post Office Department, Washington, will receive bids until Aug. 9, for one 3 hp. heavy duty floor grinder and two single arbor emery wheels; also until Aug. 11 for two stationary air compressors, motor-driven, for installation at the post offices at Philadelphia and Cleveland.

The Clarksville Farmers' Implement & Supply Co., Clarksville, Va., has tentative plans for a new one-story factory to manufacture farm implements, etc. H. A. Noblin is secretary.

The Acme Mfg. Co., Acme, N. C., is making inquiries for a 250-hp. power generator set, direct-connected to engine, and including auxiliary equipment.

The Virginia-Carolina Chemical Co., Richmond, Va., manufacturer of fertilizer products, is disposing of a bond issue of $12,500,000, a portion of the proceeds to be used for a new plant and extensions and improvements in present works. C. G. Wilson is president.

The Geer Industrial School, Geer, near Charlottesville, Va., will build a new power house.

The Travelers Garage Corporation, Norfolk, Va., has awarded contract to Baker & Brinkley, Dickson Building, for a new one-story service and repair building, 120 x 160 ft., on Cove Street, estimated to cost about $45,000. W. P. Tunstall, Bank of Commerce Building, is architect.

The Bureau of Yards and Docks, Navy Department, Washington, will commence the immediate erection of a new machine shop at the Naval Base, Pearl Harbor, H. T., estimated to cost about $186,000.

A vocational department will be installed in the proposed new high school to be erected at Claymont, Del., for which bonds for $275,000 have just been voted.

The Maurice Chemical Co., 1427 Washington Boulevard, Baltimore, recently organized, will operate a plant to manufacture refractory and high temperature cements for furnace and other service. A list of equipment is being arranged. D. E. Collins is president.

Traveling cranes, freight handling and conveying machinery, etc., will be installed on the proposed new pier to be constructed by the Port Development Commission, Baltimore, at the McComas Street Terminal, and leased to the Western Maryland Railroad Co., Baltimore. It will be 260 ft. wide and 1800 ft. long, and is estimated to cost approximately $3,000,000.

The Franklin Motor Car Co., 1017 North Eutaw Street, Baltimore, has awarded contract to the Consolidated Engineering Co., Calvert Building, for a two-story repair building, 88 x 100 ft., estimated to cost about $35,000, exclusive of equipment.

The Felstone Co., 326 Haywood Building, 46 Haywood Street, Asheville, N. C., has plans under way for the erection of a new factory, 56 x 115 ft., to manufacture concrete products. A list of equipment is being arranged. C. Marshall Gravatt heads the company.

J. E. Doherty, 2405 Granby Street, Norfolk, Va., will equip a machine and repair shop in connection with an automobile service works.

The Fayetteville Ice & Mfg. Co., Fayetteville, N. C., is perfecting plans for rebuilding its ice-manufacturing plant, recently destroyed by fire. It will have a daily capacity of 90 tons, the installation to include electric pumping machinery, electric hoists, conveying machinery, etc., in addition to main equipment. J. F. Harrison is president.

The Lowtenburg-Goodman Co., 127 Granby Street, Nor-

folk, Va., has rejected all bids recently received for a new two-story automobile service and repair building, 130 x 405 ft., and will call for new bids at an early date. Calrow & Wreen, Monroe Building, are architects.

The Fulton & Barnes Co., 1643 West Broad Street, Richmond, Va., is planning to purchase machine tools for installation in its automobile service building.

The Atlantic Ice & Coal Corporation, Athens, Ga., will soon commence the erection of a new ice and cold storage plant on Oconee Street.

Eugene F. Bates, Greenville, S. C., has awarded contract to the Fiske-Carter Construction Co., Greenville, for a new automobile machine and repair shop, 65 x 95 ft. J. E. Sirrine & Co., Greenville, are architects.

A. B. Pounds, Concord, N. C., operating a local ice-manufacturing plant, is planning for enlargements, to include the installation of a 25-ton electrically operated ice machine and auxiliary equipment.

## Milwaukee

MILWAUKEE, July 31.

SALES of machine tools in July represent a substantial gain over June, continuing the upward rise which had its beginning in March. Each succeeding month has shown consistent gains. At the same time, production has come forward, although it still is not yet possible to operate at normal capacity. Conflicting news relative to the railroad and coal strikes undoubtedly contributed something to the activity in the past two weeks. The automotive industries are by far the best source of new business. Railroad business is hard to close, due to the uncertainties of the labor situation, but some urgent needs are being filled from time to time.

The LaFayette Motors Corporation, Indianapolis, has completed arrangements to transfer its entire operation, headquarters and general offices to Milwaukee by Nov. 1, according to announcement made by Charles W. Nash, president of this concern and the Nash Motors Co., Kenosha, Wis. Contracts have been awarded for the erection of the first unit of a new LaFayette passenger car works on Clement, south of Oklahoma avenues, Milwaukee, adjoining the four-cylinder car division works of the Nash Motors. The first building will be of brick and steel, 250 x 950 ft., with steel sidewall and monitor sash, and will be erected by the H. K. Ferguson Co., Cleveland. The general contractors are Theodore Stark & Co., 130 Muskego Avenue, Milwaukee. A considerable list of machine tool and other shop equipment will be required, the capacity of the new factory being planned at three times the capacity of the original plant at Indianapolis, which will be abandoned and placed on the market and the equipment moved to Milwaukee. The new construction undertaken by the LaFayette company is entirely distinct and separate from a large new sheet metal and body shop being erected by the Nash Motors Co. as an addition to its Milwaukee four-cylinder car division, reported previously.

The Air Reduction Sales Co., Inc., 342 Madison Avenue, New York, will build a branch plant in Milwaukee for the manufacture of oxy-acetylene welding and cutting apparatus, with a proposed initial investment of $135,000, according to official advices received by the Milwaukee Association of Commerce. The company during the past week acquired five acres on Buffum Street, and expects to begin work about Aug. 15 on the erection of a shop, power house, generating and filling plant and auxiliary buildings. Edward L. Fiddyment, 272 South Water Street, Milwaukee, is local manager. It is understood that a branch plant will also be built at Birmingham, Ala.

Roy Herman, automobile dealer and repairer, Black Earth, Wis., will build a garage and service station, 70 x 90 ft., two stories and basement, estimated to cost about $20,000 complete.

The Pittsburgh Plate Glass Co., 213 Lake Street, Milwaukee, has let the general contract to the Dahlman Construction Co., 456 Broadway, for a five-story building, 86 x 154 ft., at Lake and South Water streets, to serve as a research laboratory, factory, warehouse and office building for the Patton-Pitcairn Division, manufacturing paints and varnishes, at Milwaukee. The investment will be in excess of $250,000. The architects are Kirchhoff & Rose, 221 Grand Avenue.

The Madison, Wis., Garage & Machine Co. has been organized by C. L. Lodine and has opened a garage and repair works at 18-24 North Charter Street. The machine shop will be under the management of Samuel Olson, formerly with the Gisholt Machine Co., Madison. A small list of equipment remains to be purchased.

The United States Engineer Office, Duluth, Minn., is asking sealed bids until Aug. 14 for constructing and delivering a steel derrick scow, complete with machinery and equipment.

The Edwards Motor Car Co., 2709-2715 Grand Avenue, Milwaukee, Dodge distributor and dealer, will build a new sales and service building costing $100,000 on Grand Avenue. It will be 100 x 120 ft., two stories and basement, of reinforced concrete. The general contract has been let to the Coddington Engineering Corporation, 290 Third Street, local, by Voelz & Siebert, architects, 373 Broadway.

The Marathon Motor Car Co., 210 McClellan Street, Wausau, Wis., has let the general contract to Frank Seefeldt & Co., local, for a four-story addition, 60 x 120 ft., estimated to cost $75,000. Two floors will be equipped as a machine and repair shop.

The Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., has announced plans for new construction and equipment work at its Canadian mill unit at Fort William, Ont., estimated to cost $1,000,000. The enlargement of the plant calls for increasing the capacity of the mill 100 per cent and the installation of a new 100-ton paper mill. The capacity of the hydroelectric generating plant, now producing 1500 hp., will immediately be increased to 10,000 hp. to accommodate the enlarged capacity. The present mill at Fort William was acquired recently for $200,000 from the Kaministiquita Paper & Pulp Co. The new owners are operating it as the Thunder Bay Paper Co. George W. Mead, Wisconsin Rapids, is president and general manager; F. N. Youngman is local manager.

The C. A. Shaler Co., Waupun, Wis., manufacturer of vulcanizing apparatus, tire specialties and automotive accessories, resumed production Aug. 1 in its new plant, erected at a cost of $166,000 to replace the factory which burned last February. Practically all of the new equipment has been contracted for, but further purchases are being made from time to time. C. A. Shaler is president.

The Board of Education, Madison, Wis., let the general contract to L. B. Gilbert, local, for a one-story brick and concrete addition, 78 x 80 ft., to the Madison high school, to serve as a manual arts institute. It will cost about $50,000. Equipment will be purchased in about 60 days. Frank Riley is architect.

The Ottawa, Ill., Silica Co. will build a new power plant and has let the structural steel work, involving about 100 tons, to the Lakeside Bridge & Steel Co., Milwaukee.

The Biggam Trailer Co., formerly located in the First Wisconsin National Bank Building, Milwaukee, has completed the equipment of its permanent plant at Racine, Wis., where is occupies 18,000 sq. ft. in the Racine Industrial Community Building, Racine Junction. It is now manufacturing a line of trailers ranging in capacity from 800 lb. to 5 tons.

The J. A. Grimm Coal Co., Hartford, Wis., has engaged Peacock & Frank, architects and engineers, 445 Milwaukee Street, to design a new coal storage and handling plant, estimated to cost about $20,000.

The Production Pattern & Equipment Co., Milwaukee, has moved its plant and offices from 92-94 Second Street to the new building at Broadway and Erie streets, where it occupies 15,000 sq. ft. It manufactures patterns, molding machines, flasks, core driers and other foundry appliances and equipment. P. E. Keller is secretary-treasurer and manager.

## Detroit

DETROIT, July 31.

The Holley Carburetor Co., Vancouver Avenue and the Pere Marquette Railroad line, Detroit, is taking bids on a general contract for a one-story addition, 120 x 195 ft. Albert Kahn, 1000 Marquette Building, is architect.

Porath Brothers, Detroit, are planning to rebuild the portion of their brick manufacturing plant, recently destroyed by fire with loss estimated at about $50,000, including equipment.

The Martin-Perry Corporation, York, Pa., manufacturer of automobile bodies, has leased a portion of building No. 19 at the plant of the Dort Motor Car Co., Flint, Mich., totaling about 15,000 sq. ft., for the establishment of a local plant. Initial operations will be devoted to assembling work. It is said that additional units will be established in the near future.

Parke, Davis & Co., 2951 Atwater Street, Detroit, will make extensions and improvements in its power house, estimated to cost about $45,000.

Dodge Brothers, Inc., Detroit, has acquired about 7½

acres at Windsor, Ont., for a new branch plant for Canadian business. Plans are under way for construction of the initial buildings.

The National Portland Cement Co., Mount Pleasant, Mich., will commence the immediate erection of its new plant at Coldwater Lake, estimated to cost about $500,000, with machinery. A. E. Gorham, 119 South Normal Street, is president.

The Wisconsin Public Service Co., 559 Marshall Street, Milwaukee, is completing plans for an addition to its electric power plant at Menominee, Mich., including line extensions, estimated to cost in excess of $100,000. Mead & Seastone, State Street, Madison, Wis., are engineers. J. P. Pulliam is secretary.

The Consumers' Power Co., Grand Rapids, Mich., has plans under way for extensions and improvements, including new steam turbines and auxiliary operating machinery, underground conduit lines, etc., estimated to cost close to $1,000,000.

The Pere Marquette Railroad Co., Fort Street, Detroit, has awarded contract to the Arnold Co., 105 South LaSalle Street, Chicago, Ill., for new shops and other buildings at its Wyoming Street yard, Grand Rapids, Mich., estimated to cost about $1,000,000, including equipment. Work will be placed under way at once.

The Michigan Gas & Electric Co., Three Rivers, Mich., is completing plans for a new one-story power house, estimated to cost about $45,000. P. Simmons is general manager.

The Four Wheel Hydraulic Brake Co., 708 Harper Avenue, Detroit is arranging a list of equipment for installation in an addition.

## The Central South

ST. LOUIS, July 31.

The City Council, St. Joseph, Mo., is planning for extensions and improvements in the municipal electric light and power house, estimated to cost about $300,000, including machinery.

The Treasury Department, office of the supervising architect, Washington, is taking bids until Aug. 15 for an electric-driven turbine pump for installation at the post office, St. Louis.

The Union Electric Light & Power Co., St. Louis, is perfecting plans for reorganization, to include the issuance of $60,000,000 of new stock, a portion of the fund to be used for extensions and improvements. It is proposed to build an addition to the main generating plant and to erect a new power plant in the East Side section. Louis H. Egan is president.

The Doniphan Light, Ice & Power Co., Doniphan, Mo., S. C. Danner, P. O. Box No. 213, president, has plans in progress for a new cold storage and refrigerating plant.

The City Engineering Department, Louisville, has made application for permission to build a municipal hydroelectric generating plant at the United States Lock and Dam, Louisville Falls, Ohio River, Louisville.

The W. R. Martin Co., Louisville, operating a machine shop, is arranging for enlargements, to include the equipment of a new forge shop.

A vocational department will be installed in the new two-story and basement junior high school, 123 x 175 ft., to be erected at Owensboro, Ky., estimated to cost about $250,000.

The Oklahoma Gas & Electric Co., Oklahoma City, Okla., has disposed of a bond issue of $500,000, a portion of the proceeds to be used for extensions and improvements in plant and system.

A vocational department will be installed in the new three-story high school to be erected at Enid, Okla., 110 x 145 ft., to be known as the Kenwood Junior High School, estimated to cost about $125,000; and in the new Garfield Junior High School, two stories to cost about $90,000, at the same place. Bids for both buildings were rejected recently, and new bids have been asked. R. W. Shaw, Beck Building, is architect.

The Molybdenum Co. of America, 1008 Empire Building, Pittsburgh, is planning the erection of new hydroelectric generating plants on the Red River and Columbine Creek, Taos County, N. M. The company is also arranging for the establishment of new production plants in this section.

The Central Paper Box Co., 2935 Belleview Avenue, Kansas City, Mo., has awarded contract to the Sofus & Sorenson Construction Co., 2701 East Thirty-first Street, for a two-story and basement plant, 126 x 153 ft., on Belleview Avenue, estimated to cost in excess of $50,000, including equipment.

The Memphis Sash & Door Co., 673 South Dudley Street, Memphis, Tenn., has acquired property at Railroad Street and Roland Avenue, and plans the erection of a three-story factory, 200 x 300 ft.

W. A. McGuire, Horse Cave, Ky., is organizing a company to build and operate a cold storage and refrigerating plant.

Fire, July 18, destroyed a portion of the general plant, including steel tankage department, etc., of the Prairie Pipe Line Co., Jenks, Okla., with loss approximating $100,000. It is said that the plant will be rebuilt.

C. T. Dana, 1505 Del Norte Avenue, St. Louis, is organizing a company to build and operate a hydroelectric power plant on the Black River, estimated to cost close to $500,000. It will have an initial capacity of 2000 kw. Fuller & Beard, Chemical Building, St. Louis, are engineers.

The Missouri Lumber Co., Hot Springs, Ark., has plans under way to rebuild its plant, destroyed by fire with loss estimated at $75,000, including machinery. The new mill will cost approximately a like amount.

A vocational department will be installed in the new two-story and basement central high school, 140 x 170 ft., to be erected at Bowling Green, Ky., estimated to cost about $100,000. Clifford B. Shopbell & Co., Evansville, Ind., are architects.

The Green Light & Power Co., Pleasant Hill, Mo., is concluding arrangements for the purchase of an existing power plant and system at Warrensburg, Mo. Plans are under way for extensions and improvements.

The Caddo River Lumber Co., Glenwood, Ark., is planning for the early installation of machinery and electric equipment in its new saw mill, construction for which is under way. It is estimated to cost in excess of $50,000, and is expected to be ready for operation in September.

A vocational department will be installed in the two-story high school to be erected at Eufaula, Okla., estimated to cost about $75,000, for which bids on a general contract are being received until Aug. 24. Jewel Hicks, West Main Street, Oklahoma City, Okla., is architect.

## The Gulf States

BIRMINGHAM, July 31.

The Magnolia Petroleum Co., Dallas, Tex., will build a new central repair plant at Electra, Tex., for machinery and parts manufacture. It will comprise a one-story machine shop, 40 x 112 ft.; one-story forge shop, 60 x 140 ft.; boiler shop, 40 x 80 ft.; pipe and machine shop, 40 x 60 ft.; automobile repair shops, warehouses and other buildings. It is estimated to cost about $250,000, with machinery. The company is also contemplating the erection of a new ice-manufacturing plant. A tract, 500 x 1000 ft., will be used for the works and other buildings added later.

The Board of Directors, University of Texas, Austin, Tex., has had plans prepared for a new power house at Galveston, Tex.

The Richardson Co., Monroe, La., manufacturer of roofing products, has awarded contract to the Austin Co., Cleveland, for the initial unit of a new plant, comprising a two-story factory, 30 x 300 ft. Other buildings will be erected later, making the entire plant cost close to $700,000.

The Consolidated Ice Co., Monroe, La., will commence the immediate erection of a new ice-manufacturing plant.

Fire, July 19, destroyed the engine house and shop buildings of the Texas & Pacific Railroad, El Paso, Tex., with loss reported in excess of $200,000, including equipment.

J. E. Adams and E. W. Gough, Sebring, Fla., have acquired a local building and will establish a machine and repair shop, primarily for automobile work. A list of equipment is being arranged.

Plans are being prepared for the erection of three fertilizer plants at Tampa, Fla., estimated to cost in excess of $300,000, including machinery. The factories will be built by companies recently organized, including the Melville Fertilizer Co., Tampa, capitalized at $1,000,000, Herbert M. Benker, president; the Dundee Fertilizer Co., Winter Haven, Fla., capitalized at $250,000, W. T. Overstreet, president; and the Cape Fear Fertilizer Co., Fayetteville, N. C., operating with a capital of $1,500,000.

The Shreveport Brick & Tile Co., Shreveport, La., has acquired property on Douglas Island, for a new plant, equipped for a production of about 900,000 bricks per month. The company has a tract of 100 acres. J. W. Peyton is president.

Smoak & Goin, Ocala, Fla., have plans under way for the establishment of a new plant on property recently acquired on Orange Street, for the manufacture of motor truck bodies.

The West Florida Power Co., Tallahassee, Fla., is perfecting plans for a new hydroelectric generating plant on the Ocklockonee River, estimated to cost close to $1,000,000, including equipment.

The Oak Lawn Ice & Cold Storage Co., Dallas, Tex.,

has plans under consideration for a new ice-manufacturing plant at Gertrude Street and Cole Avenue.

A vocational department will be installed in the high school to be erected by the East Baton Rouge Parish School Board, East Baton Rouge, La. Preliminary plans are under way. R. C. Gordon is president.

The City Council, Corinth, Miss., is arranging for a bond issue of $100,000, the proceeds to be used for the erection of a municipal electric light and power plant. Fuller & Beard, Chemical Building, St. Louis, are consulting engineers.

The Chalmette Petroleum Corporation, New Orleans, formed by a recent merger of the Chalmette Oil Refining Co., and the Louisiana Oil Exporting Co., capitalized at $1,000,000, has plans under way for enlargements in its oil refinery, to include the installation of new machinery.

The Ballinger Compress Co., Ballinger, Tex., will make extensions and improvements in its cotton compress plant, including the installation of additional equipment at the power house.

The Humble Oil Refining Co., and the Pierce Oil Co., Laredo, Tex., are planning to rebuild the portions of their plants destroyed by fire July 20, with combined loss estimated in excess of $100,000.

The Stedman Fruit Co., Beaumont, Tex., will commence the immediate erection of a new refrigerating and cold storage plant, estimated to cost in excess of $150,000 with equipment.

Traveling cranes, freight handling and conveying machinery, etc., will be installed at the Tampa, Fla., harbor, in connection with wharf and dock extensions and improvements to be made by the city, estimated to cost about $600,000. A. D. Hall is city manager in charge.

## Indiana

INDIANAPOLIS, July 31.

The Paramount Wheel & Engineering Co., Hartford City, Ind., now being organized with a capital of $300,000, has concluded arrangements with the Chamber of Commerce for a site for the erection of its new plant to manufacture metal automobile wheels and other automotive products. The initial works is estimated to cost in excess of $100,000, including machinery, and will give employment to about 200.

The Board of County Commissioners, Lawrenceburg, Ind., has completed plans for an electric power house at the County infirmary. Bids on a general contract are being asked until Aug. 7.

The Concealed Door Check Co., Kokomo, Ind., recently organized, will operate a local plant for the manufacture of a special door check and other hardware specialties. J. C. Patten is president, and Floyd W. Eastman, secretary and general manager.

The Modern Brass Foundry, 1319 Bates Street, Indianapolis, is planning to rebuild its furnace room, partially destroyed by fire, July 25.

The Indiana & Michigan Electric Co., 220 West Colfax Avenue, South Bend, Ind., has applied for permission to construct and operate a hydroelectric power plant on the St. Joseph River, Berrien County, Mich. F. A. Bryan is in charge.

The Hercules Corporation, Evansville, Ind., manufacturer of wagons, gas engines, etc., is arranging to devote a portion of its plant to the manufacture of refrigerators and refrigerating apparatus.

The National Malleable Castings Co., Halmes Avenue and Michigan Street, Indianapolis, will rebuild the portion of its plant, destroyed by fire July 21.

A vocational department will be installed in the new senior and junior high school to be erected at Plymouth, Ind., two stories, 163 x 179 ft., estimated to cost about $300,000, for which bids on a general contract are being received until Aug. 7. Ernest W. Young, Dean Building, South Bend, Ind., is architect.

## The Pacific Coast

SAN FRANCISCO, July 25.

The General Electric Co., Rialto Building, San Francisco, Cal., has awarded contract to the Foundation Co., Holbrook Building, for a new one and two-story plant at East Fourteenth Avenue and Fifty-fourth Street, Oakland, 132 x 235 ft., estimated to cost $200,000 with equipment.

The Los Angeles Railway Co., Pacific Electric Building, Los Angeles, has had plans prepared for a new car repair shop, aggregating about 94,500 sq. ft. and estimated to cost approximately $140,000. The engineering department of the company is in charge.

The Snow Mountain Water & Power Co., 216 Pine Street, San Francisco, has applied for permission to construct two hydroelectric power plants on the Middle Eel River, Mendocino County. Each plant will have a capacity of close to 12,000 hp., and the project is estimated to cost approximately $10,000,000.

The Royal Motor Accessory & Mfg. Co., Sawtelle, Cal., has completed plans for new works at Sawtelle and Pico Boulevards to manufacture automobile equipment. It has a tract of about 3 acres. The initial plant will cost approximately $100,000 with equipment. H. C. Cove is president.

The Star Motor Co. of California, Oakland, Cal., a subsidiary of the Durant Motor Co., with local plant on East Fourteenth Street, has awarded contract to the P. J. Walker Co., Monadnock Building, San Francisco, for two buildings to comprise the initial units of its new plant. The structures will be 100 x 200 ft., and 80 x 150 ft., respectively. The entire plant is estimated to cost in excess of $750,000.

The Pacific Coast Borax Co., Kohl Building, San Francisco, has acquired the property of the Chandler Shipbuilding Co. at San Pedro Harbor, Los Angeles, comprising about 10 acres, as a site for a new refinery to cost about $1,000,000, including machinery. The works will include a power house, machine shop and other mechanical buildings, and will require crushing, mixing, conveying machinery, etc. C. B. Zabriskie is president.

The Butte Meadows Co., Chico, Cal., has applied for permission to construct and operate a hydroelectric power plant on Butte Creek, estimated to cost approximately $40,000.

The Coy Valve Co., Chehalis, Wash., recently organized with a capital of $500,000, is selecting a site for the erection of a plant to manufacture valves and other specialties.

The Seattle Chain & Mfg. Co., Seattle, Wash., is arranging for a lease of property from the City Industrial Bureau, as a site for a new plant.

The E. K. Wood Lumber Co., Anacortes, Wash., has acquired about 420 acres as a site for the erection of a lumber mill. All departments will be electrically-operated. Traveling cranes and kindred equipment will be installed on loading docks, which will be constructed in connection with the plant.

W. W. Rosebraugh, Salem, Ore., has plans under way for rebuilding his machine shop, foundry and boiler works, at Seventeenth and Oak streets, recently destroyed by fire.

Vocational departments will be installed in the proposed two high schools to be constructed at Portland, Ore., estimated to cost close to $2,000,000.

## Canada

TORONTO, July 31.

LOCAL dealers state that inquiries for many lines of equipment are being received which portend considerable activity around September or October. Canadian equipment manufacturers generally are quite actively engaged and in the past few weeks several have increased their working forces to cope with the orders on their books. In most cases, however, the demand for equipment is confined to one or two machines, with only a small amount of business coming out for larger sized orders.

The automotive industry is buying steadily and dealers state that it is a very poor week when they cannot sell a machine or tool to some of the leading automobile manufacturers in Ontario. A better demand is also springing up for equipment for replacement purposes, and manufacturers who have been putting off entering the market for some special machine now find that they can wait no longer. Small tools are moving briskly, with users entering the market both for spot and future deliveries.

The Ontario Steel Products Co., Ltd., Gananoque, Ont., proposes to spend about $60,000 on new machinery and equipment this year.

The Ford Motor Co. of Canada will commence building operations on the proposed $6,000,000 plant at Ford, Ont., within two weeks. The first building will be 400 x 1300 ft., and will be an extension to the present works. It is expected to be completed by January. It has also secured a site on Danforth Avenue, just outside the city limits of Toronto, and is preparing to establish a plant to cost about $1,000,000. The company is asking for sewage and water service from the city.

The Canadian National Railways are erecting a roundhouse and other buildings for complete divisional point

facilities near Fort William, Ont., to cost $250,000. H. A. Dixon, Winnipeg, Man., is chief engineer.

The Canadian Pacific Railway will build an engine house at Medicine Hat, Alta., to cost $30,000.

The Taylor Rubber Co., Ltd., 37 Richmond Street East, Toronto, will build a factory at Aurora, Ont., to manufacture automobile tubes.

The Sydenham Brick & Tile Co., Ltd., Wallaceburg, Ont., will build an addition to its plant to cost about $30,000. E. C. Morse is general manager.

S. L. Lambert, Welland, Ont., will rebuild his sawmill, recently destroyed by fire, and is interested in prices of equipment.

The Milton Pressed Brick Co., Milton, Ont., will spend $10,000 on construction of kiln and other improvements.

C. N. Tingle, Hanna, Alta., is receiving bids for the erection of a power plant.

The Alberta Hydro-Electric Co., Calgary, Alta., proposes to build a hydroelectric plant on the Bow River, to consist of four dams, the first of which will cost $500,000.

E. B. Reed, who recently severed his connection with Maguire, Patterson & Palmer, Ltd., match manufacturer, has leased a section of the building of the Pembroke Iron Works, Pembroke, Ont., and with three local associates will establish a plant for the manufacture of veneer, panels and plywood. The machinery has been purchased.

## BOOK REVIEWS

**Official Report of the Ninth National Foreign Trade Convention.** Issued by the secretary, O. K. Davis, National Foreign Trade Convention headquarters, New York. Pages, 621, 6 x 9 in. Price, $2.50.

This report and its predecessors, which give the addresses made at the annual conventions under the auspices of the National Foreign Trade Council, together with a stenotype report of the proceedings, including discussions at the various group sessions, have come to be in a real sense text books of American foreign trade. One who has been to any extent a reader of them has not missed the evolution in literature of this sort. In earlier foreign trade convention days the discussions brought out a good many hackneyed observations. There was a good deal of sameness in the advice given as to what to do and what not to do in trying to trade with people of other countries. Makers of speeches of the old kind have disappeared from the floors of the convention and the group meetings, and in more recent years we have had the experiences of men fresh from foreign fields and of sales managers at home who have been willing to give others the results of their own successful methods and their latest contacts with resourceful salesmen in other lands.

Conditions due to the war have compelled some very hard thinking on the part of our exporting manufacturers. They have had to take new steps without the guidance of experience. The past two years in particular have been trying ones, and a sifting process has been going on which has separated the opportunists in export trade from those who years ago set about the development of foreign business with a purpose of standing by it through thick and thin.

The Philadelphia convention of May, 1922, with which the present volume deals, shows better than any other the result of the seasoning process. The speakers were well selected and knew whereof they spoke. There was probably a smaller admixture of academic theorizing than at any of the eight conventions that precedes it. Of particular interest are the sections dealing with market conditions abroad, the American merchant marine, our foreign loan policy, the exchange situation, export sale, promotion, and public education for greater foreign trade.

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Industrial Furnaces, published by the Chapman-Stein Furnace Co., Mt. Vernon, Ohio, is a series of bulletins bound together, describing recuperative furnaces in general and those specifically for use in rolling mills and for annealing. The furnace of the Chapman-Stein company is built under patents held by Charles M. Stein of the Societe Anonyme des Appareils de Manutention et Fours Stein, Paris, France. It is explained that the advantage of a recuperative furnace is that it will preheat all the air required for combustion to a temperature about 250 to 350 deg. Fahr. less than the temperature of the spent furnace gases entering the recuperator. It is also pointed out that the recuperative furnace is not suited to conditions which demand a large overload capacity, under such requirements the regenerative furnace being called for, with its large number of checkers for storing heat. The recuperative furnace uses thin tile, comparatively light in weight, designed to transfer heat rather than to store it. Hence it is not suited to open-hearth furnaces, large glass melting tanks and large forge furnaces which heat ingots over 5 tons or more than 32 in. in diameter. The distinctive feature claimed for the Stein furnace is that the recuperator air ducts are vertical and have no turns or off-sets.

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A standard code regulating the installation of warm air furnaces in residences has been compiled under the guidance of the American Society of Heating and Ventilating Engineers, the National Warm Air Heating and Ventilating Association, the National Association of Sheet Metal Contractors and the Western Warm Air Furnace and Supply Association. The code, which is in small pamphlet form, shows that considerable engineering thought has been given to warm air furnace installation with the object of taking it from the field of careless rule of thumb application. The present draft has not yet been approved by all of the four associations, but those interested could probably obtain a copy by applying to any one of the four associations named.

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### New Books Received

**The International Molders Union of North America.** By Frank T. Stockton, Ph.D., Professor of Economics, University of South Dakota. Pages, 234, 6¼ x 9½ in. Published by the Johns Hopkins Press (in series of Johns Hopkins University Studies in Historical and Political Science), Baltimore. Price, $1.50.

**The Analysis of Non-Ferrous Alloys.** By Fred Ibbotson and Leslie Aitchison. Pages 246, 5½ by 8½ in.; illustrations, 21. Published by Longmans, Green & Co., 55 Fifth Avenue, New York. Price, $4.

**Machine Tool Operation.** Part II. By Henry D. Burghardt. Pages 438, 4¾ x 7½ in.; illustrations, 298. Published by the McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, $2.75.

**Production Engineering and Cost Keeping.** By William R. Bassett and Johnson Heywood. Pages 311, 6 x 9 in.; illustrations, 115. Published by the McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, $3.50.

**Hütte—Taschenbuch für Eisenhüttenleute.** Compiled by Akademischer Verein Hütte, Berlin. Pages 982, 5 x 7½ in.; illustrations, 511. Published by Wilhelm Ernst & Sohn, Berlin, Germany. Price, 738 marks.

**Report on Productive Industries, Railways, Taxes and Assessments, Waterways and Miscellaneous Statistics.** Compiled for Commonwealth of Pennsylvania for 1920. Pages 1040, 5¾ x 9 in. Published by J. L. L. Kuhn, printer to the Commonwealth, Harrisburg, Pa.

**The Gantt Chart.** By Wallace Clark. Pages 155, 6 x 8½ in.; illustrations, 37. Published by the Ronald Press Co., 20 Vesey Street, New York, Price, $2.50.

**Industrial Unionism in America.** By Marion Dutton Savage. Pages 344, 5 x 7½ in. Published by the Ronald Press Co., 20 Vesey Street, New York. Price, $2.25.

**The Peril of the Republic.** By Daniel Chauncey Brewer. Pages 354, 5 x 7¾ in. Published by G. P. Putnam's Sons, 2 West Forty-fifth Street, New York. Price, $1.75.

## NEW TRADE PUBLICATIONS

**Centrifugal Pump Guide.**—Allis-Chalmers Mfg. Co., Milwaukee. A 4-page monthly bulletin listing the Allis-Chalmers pumping units ready for immediate shipment.

**Ash Handling.**—Conveyors Corporation of America, 326 West Madison Street, Chicago. A 12-page 8½ in. x 4 in. booklet illustrating and describing the American steam jet ash conveyor, by means of which ashes are drawn by suction and then propelled through a discharge pipe line to the collecting point.

**American-Made Drawing Instruments.**—The C. F. Pease Co., 813-21 North Franklin Street, Chicago. A 16-page illustrated catalog showing detail of instruments and sets manufactured in Chicago, and adapted to professional drafting service.

**Power Transmission Machinery.**—Hill Clutch Co., Cleveland. Four-page leaflet describing an installation of Hill clutches at the Eddy Paper Mills, Three Rivers, Mich.

**Adjustable Limit Snap Gage.**—Meldrum-Gabrielson Corporation, Syracuse, N. Y. A 12-page booklet, 7½ x 4 in., cataloging, illustrating and describing the Syracuse gage for use in accurate machining of duplicate parts.

**Fire Tools, Hooks, Etc.**—Leetonia Tool Co., Leetonia, Ohio. Pages 72A and 72B for loose-leaf catalog No. 3.

**Radiation Pyrometers.**—Thwing Instrument Co., 3339 Lancaster Avenue, Philadelphia. A 16-page bulletin (No. 11) illustrating and describing the indicating and multiple-recording types of radiation pyrometers designed by Dr. C. B. Thwing, president of the company. The theory of operation is explained.

**Chain Furnace Screens.**—E. J. Codd Co., 700 South Caroline Street, Baltimore. An 8-page bulletin showing the use of the Wiegan patented chain screen door on furnaces, ovens, cupolas, electric furnaces, kilns, boiler fires, etc. The curtain of strands of steel chains give a view of the furnace interior and do not interfere with the passage of the charge or the manipulating tools.

**Optical Pyrometer.**—Scientific Materials Co., Pittsburgh. A 16-page 6 in. x 9 in. illustrated booklet giving technical data on the theory, design and operation of the F. & F. pyrometer.

**Forging and Heating Furnaces.**—Bulletin No. 241, W. S. Rockwell Co., 50 Church Street, New York, with 26 illustrations on 12 pages, describes many types of furnaces for forging work and heating steel and other materials. A discussion is included, on the need for better heating in forging and forming practice.

**Level and Transit.**—Warren-Knight Co., 136 North Twelfth Street, Philadelphia. An illustrated circular devoted to the Sterling combination level and transit, an instrument which may be used either as a level or as a transit without the use of detachable parts.

**Precision Measuring Tools.**—Van Keuren Co., 362 Chambers Street, Boston. Catalog, illustrative and descriptive with prices, of combination precision gage blocks, gage block accessories, plug gages, measuring wires for screw threads and profile gages, surface plates and light waves measuring outfits.

**Sprague Electric Dynamometer Chassis Test System.**—An 8-page leaflet issued by the Sprague Electric Works, 524 West Thirty-fourth Street, New York. This describes, with the aid of eight photographs, a testing system for cars at speeds up to 60 miles per hour. During the test the car is stationary upon the test block, but the wheels are revolving at that speed. The system is recommended for the manufacturer to tune up a car into condition before shipment and for the service station to put customers' cars in good shape on the basis of actual performance under load.

**Toledo Drop Hammers and Trimming and Forging Presses.**—A 64-page catalog issued by the Toledo Machine & Tool Co., Toledo, Ohio. This is section 9-A of Catalog No. 11. It describes and illustrates a large number of hammers and presses and gives much in the way of particulars of dimensions, capacities, etc., in tables. The data given in the tables is unusually complete. The tools covered include board lift drop hammers, bench drop hammers, drop hammers, trimming presses, trimming and forging presses and forging presses.

## Plans of New Companies

**[No news in regard to new incorporations is published in THE IRON AGE until it has been investigated by correspondence or by personal call.]**

The Schmidgall Tool Co., 617 Lincoln Avenue, Peoria, Ill., recently incorporated with capital stock of $10,000, will manufacture all kinds of cutting tools, wire and iron specialties such as bank cages, fences, gates, etc., but will specialize on granite and stone cutters' tools. The company has a small shop which will answer its present requirements, but is in the market for a 200-lb. drop hammer. Officers are Carl H. Schmidgall, president; Lester R. Renegar, vice-president; Roy A. Breymeier, secretary-treasurer.

The Perfection Radio Laboratory, Clinton, Iowa, of which H. L. Bailey is secretary and general manager, has been incorporated. Plans are under way for the construction of a factory building within the near future and later on the company will be in the market for screw machines, punches, etc. Various types of radio apparatus and parts will be manufactured.

The Motor Parts Machine Co., 815 East Pike Street, Seattle, Wash., which has been engaged in crankshaft and cylinder grinding for some time, has been incorporated. Manufacture of automobile parts, particularly pistons and piston pins, is under way and later on the company may be in the market for additional shop equipment.

The Sterling Wire Machinery Co., Sterling, Ill., recently incorporated with capital stock of $25,000, will sell wire-working machinery which it will have built on contract.

The Lloyd Engineering Co., 241 Cortlandt Street, New York, incorporated to do all kinds of blower and sheet metal work, has a fully equipped shop for making all kinds of sheet metal products, and does not propose to expand at present. Officers: E. M. Lloyd, J. E. Wells and U. Lloyd.

The Hartman Brake Corporation, New York, has been incorporated with a capital of $300,000, to manufacture brakes, brake bands, etc. Incorporators: T. F. Thornton, E. S. Wolbarst and J. P. H. Rieper. Plans for manufacturing are still pending. Feiner & Maass, 66 Pine Street, New York, represent the corporation.

The Wright Radio Corporation, New York, has been chartered under state laws to manufacture wireless equipment. Incorporators: C. W. Irwin, T. M. Smith and J. A. Delany. Plans for manufacturing are undecided. Address G. P. Breckenridge, 7 Dey Street, N. Y.

The Michigan Motor Specialties Corporation, foot of Mt. Elliott Avenue, Detroit, has been incorporated to take over the assets of a bankrupt company of the same name, which were sold at public auction recently. The new company will continue to manufacture the same line of automobile parts, screw machine work, stampings, including some patented oil-can holders, priming cups, etc., which were manufactured by its predecessor. The company does not contemplate purchasing additional shop equipment at this time. Officers of the new company are M. Mitshkun, president and treasurer; Charles W. Beck, vice-president; Charles W. Beck, Jr., secretary and general manager.

The Trippe Reflector Corporation, 600 Hartford Building, Chicago, has been organized and incorporated to produce an automobile reflector, which at first will be manufactured under contract. Graham Trippe is president.

The Standard Castings Co., South Bend, Ind., has been incorporated to manufacture aluminum castings. The company already has its own plant fully equipped. John M. Zigler is treasurer.

The Eureka Machine Works, Eureka, Kan., has recently opened a shop in the Kansas oil fields for the manufacture and repair of tools and materials used in this work such as drills, stems, pins, boxes, pipe threading, welding and other classes of smithing and machine work. Huffman & Boyersmith are the proprietors.

The Wood-Reinecke Electric Co., Louisville, Ky., incorporated several weeks ago with a capital of $30,000, will do a distributing and jobbing business and will not, for the present, engage in manufacturing. It is ordering a complete line of electric supplies.

The Perfection Radio Laboratories, Inc., Clinton, Iowa, recently incorporated with a capital of $1,000,000 to manufacture radio equipment, has received large orders and has found expansion necessary. Ground is being acquired and preparations made to erect a plant. Incorporators: F. M. Bailey, M. S. Ackles, H. L. Bailey and D. I. Bailey.

The C. & C. Appliance Corporation has been incorporated with a capital stock of $50,000, to manufacture and exploit four products patented by one of the incorporators, D. O. Cloud, and to be known as an electric automatic hammer, a pipe hanger and two accessories. A contract has been awarded for making the hanger, but bids are open for

manufacturing the other products. Address D. O. Cloud, 48 West Broadway, New York.

The Multi-Needle Engineering Corporation, Brooklyn, N. Y., has been incorporated with a capital of $10,000, to manufacture steel needles and kindred specialties. Incorporators: A. J. Hugger, and H. N. Hulander. It has taken over the Multi-Needle Machine Co., and is ready to manufacture. Address H. R. Berlinicke, 160 Broadway, New York.

The Schofield Mfg. Co., New York, has been incorporated with a capital of $50,000, to manufacture hardware products. Incorporators: J. Bramwell, A. P. Anderson, and F. W. Oberkirch. It is in the process of organization, but does not propose temporarily to build, since it is manufacturing under contract. Address Davis, Wagner, Heater & Holton, 34 Nassau Street, New York.

Miranda Brothers, Inc., 132 Nassau Street, New York, has been chartered under state laws to manufacture motors and engines. Incorporators: I. J. Miranda, Jr., L. Drecher and B. B. Smith. No manufacturing is being done at present, however, the company merely acting in the capacity of export department for the Driggs Ordnance & Mfg. Co., the Mercer Motor Car Co. and the Commerce Motor Car Co.

The Aviation Syndicate, Inc., New York, has been incorporated with a $150,000 capital with wide powers including the manufacture of airplanes and parts. H. Barber, 30 East Forty-second Street, New York, is the chief incorporator. Its immediate object is to act as a parent company for an air transport concern to be established soon. The operating companies under this parent will do some manufacturing through contract of products relating to aircraft. Among these are all-steel hangars, radio stations and some aircraft.

# IRON AND INDUSTRIAL STOCKS

## Backed and Filled Past Week with a Negligible Net Result

Prices of iron and industrial stocks and bonds have backed and filled the past week with a negligible net result. Day to day domestic and foreign economic developments proved conflicting. The ease of money is regarded as a factor in helping industry to weather the railroad and coal strikes. Buying power of the Western section of the country has been lessened by declining grain values, while that of the South has increased due to the appreciation in cotton values. Failures the country over are remarkably unimportant.

The range of prices on active iron and industrial stocks from Monday of last week to Monday of this week was as follows:

| | | | |
|---|---|---|---|
| Allis-Chalm. | 51¾ - 54½ | Inland Steel | 52¾ - 53¾ |
| Allis-Chalm. pf. | 98 - 98½ | Int. Har. | 103 -103½ |
| Am. B. S. & F. | 63⅞ - 65 | Lack. Steel | 76⅞ - 79¾ |
| Am. B. S. & F. pf. | -108 | Lima Loco. | 105¾ -109⅝ |
| Am. Can | 55½ - 59⅞ | Midvale Steel | 34½ - 37⅛ |
| Am. Can pf. | 109 -109½ | Nat.-Acme | 17 - 17½ |
| Am. Car & F. | 166 -172½ | Nat. E. & Stm. | 53⅜ - 56¼ |
| Am. Car & F. pf. | -120¾ | N. Y. Air Brake | 78½ - 80½ |
| Am. Loco. | 113½ -119¾ | Nova Scotia Steel | - 31 |
| Am. Loco. pf. | 117 -117¼ | Otis Steel | 11 - 12 |
| Am. Stl. Fdries. | 36½ - 38 | Pressed Steel | 79 - 82½ |
| Am. Radiator | 96 -101 | Ry. Stl. Spring | 105 -108¾ |
| Am. Steel F. pf. | - 99⅝ | Ry. Stl. Sprg. pf. | -114½ |
| Bald. Loco. | 115¾ -120¾ | Replogle Steel | 31¼ - 34 |
| Beth. Steel | 74 - 76 | Republic | 71¼ - 74⅞ |
| Beth. Stl. Cl. B. | 75¾ - 79 | Republic pf | 92⅛ - 92⅞ |
| Beth. Stl. 8% pf. | 113 -114½ | Sloss | 45 - 46 |
| Brier Hill | - 18 | Steel of Canada | 72½ - 74⅜ |
| Br. Em. Steel | - 10½ | Superior Steel | - 32 |
| Br. E. Stl. 1st pf. | - 73 | Trans.-Williams | 37½ - 38 |
| Br. E. Stl. 2d pf. | 30 - 30½ | Un. Alloy Steel | 39 - 39½ |
| Chic. Pneu. Tool | 69⅞ - 71⅝ | U. S. Pipe | 32¾ - 35⅜ |
| Colo. Fuel | 30 - 31 | U. S. Pipe pf. | 68 - 72½ |
| Cruc. Steel | 81½ - 91⅝ | U. S. Steel | 99½ -101¾ |
| Cruc. Steel pf. | 92½ - 93½ | U. S. Steel pf. | 120 -121¼ |
| Dom. Steel | 32 - 32¼ | Vanadium Steel | 45 - 50½ |
| Gen. Electric | 174 -182 | Va. I. C. & C. | - 48 |
| Gt. No. Ore. Cert. | 39 - 40¼ | W'house E. & M. | 59¾ - 62½ |
| Gulf States Steel | 79 - 85½ | | |

## Industrial Finances

Under the terms of the proposed Republic-Midvale-Inland steel merger, the Midvale stockholders are to receive for each share of the holdings 75 per cent of stock of the North American Steel, and 25 per cent of stock of a new company to be formed to take over and operate the Nicetown plant owned by the Midvale Steel & Ordnance Co.

The Remington Cutlery Works, Inc., Bridgeport, Conn., incorporated May 15, last, has increased its capital stock from $25,000 to $1,500,000.

At a special meeting of the stockholders of the Southern Coal & Iron Corporation called for Aug. 14 the proposed increase of its stock from $1,500,000 to $3,000,000 will be voted on.

The Lima Locomotive Works, Inc., shows in its 1921 report a gross income of $12,528,154; operating income, $3,112,005; net earnings after Federal taxes, etc., $1,136,591, and a surplus after dividends of $631,541. The Dec. 31 balance sheet shows cash on hand or in banks $873,644, and a surplus of $2,470,993.

The Penn Seaboard Steel Corporation reports for the first half of 1922 net sales of $834,470; working profits, $49,281; deficit after selling and administration expenses, $90,290, and a deficit after interest charges, etc. of $399,963.

The profits of the Ontario Steel Products Co., Ltd., Gananoque, Ont., for the year ended June 30, 1922, amounted to $111,083, a decrease of $81,362, from the level established in the previous year. The amount of $59,802 was written off for depreciation, a sum greater than a year ago by over $29,000. The net profits were $81,282, which with the $564,087 brought forward from the previous year, gave a total of $645,369 for distribution. Bond interest consumed $30,222. The regular dividend of 7 per cent was paid on the preferred stock, amounting to $52,500. Two per cent quarterly was paid on the common shares in August and November, 1921 and one per cent in February, 1922, these payments calling in the aggregate for $37,500. At the meeting of directors held last April, it was decided, on account of the uncertain business condition, to suspend further payments of dividends on the common shares. The directors have authorized the expenditure of approximately $60,000 during the coming year for the installation of modern and improved methods of manufacture.

The Chicago Pneumatic Tool Co. for the six months ended with June, reports earnings of $258,477. After deducting a reserve of $111,604 for depreciation and contingencies there was a net profit of $146,873.

Pursuant to resolutions of directors adopted July 21, 100,000 additional shares of the Penn Seaboard Steel Co. stock have been authorized to be issued for cash. The proceeds derived from the sale of this stock will be used to reduce current liabilities and to provide additional working capital.

The plant and all other assets of the New Process Gear Corporation, Syracuse, N. Y., with a value estimated at $3,000,000, will be sold there by Mayor George R. Lunn, of Schenectady, and Francis G. Gaffey, of New York, as special masters, at noon August 22. This sale will complete the liquidation of the Willys Corporation, of which the New Process Gear Corporation was a subsidiary, as far as physical properties are concerned.

## Trade Changes

The Connecticut Electric Steel Co., Inc., Hartford, Conn., at a meeting held recently, voted to dissolve. Claims against the company should be sent to Day & Berry, 750 Main Street, Hartford, Conn., attorneys for the directors acting as trustees.

The New England Structural Co., Everett, Mass., has leased quarters in the Massachusetts Trust Co. building, Denvonshire Street, Boston. The company formerly maintained offices on State Street, but relinquished these some months ago.

The National Carbon Co., Inc., has established finishing plants at 237 East Forty-first Street, New York, and at 560 West Congress Street, Chicago, to supplement the emergency department maintained for some time at the Cleveland factory. Both of these plants will carry stocks of Columbia carbon, graphite and metal graphite brushes, and all sizes equipped with special methods of finishing will be available.

The Chandler & Farquhar Co., Boston, hardware and machinists' supplies, has leased for a term of years the large store and basement at 256-260 Devonshire Street. The new quarters are served with a rear entrance from Federal Court off 121 Federal Street and include the entire chamber on the second floor of the building at 250-260 Devonshire Street, which forms a part of the group of buildings on Winthrop Square known as the Carter-Rice Building. The new quarters will give the company approximately 40 per cent more floor space than at present, with a main floor nearly three times as large as the one now occupied. Extensive alterations are to be made to the three floors for the occupancy of the Chandler & Farquhar Co. about the first of next year, when it will move from its present quarters 32-38 Federal Street, where it has been located for more than 28 years. With the alterations, the company will be provided with ample loading and unloading platform space, which has not been possible in the present location. The company will operate its own elevator service.

# Current Metal Prices

**On Small Lots, Delivered from Merchants' Stocks, New York City**

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossbile to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

### Iron and Soft Steel Bars and Shapes

| | Per Lb. |
|---|---|
| Bars: | |
| Refined iron bars, base price | 2.73c. |
| Swedish bars, base price | 7.00c. |
| Soft steel bars, base price | 2.73c. |
| Hoops, base price | 3.78c. |
| Bands, base price | 3.38c. |
| Beams and channels, angles and tees 3 in. x ¼ in. and larger, base | 2.83c. |
| Channels, angles and tees under 3 in. x ¼ in., base | 2.73c. |

### Merchant Steel

| | Per Lb. |
|---|---|
| Tire, 1½ x ½ in. and larger | 2.73c. |
| (Smooth finish, 1 to 2½ x ¼ in. and larger) | 2.83c. |
| Toe-calk, ½ x ⅜ in. and larger | 3.50c. |
| Cold-rolled strip, soft and quarter hard | 6.25c. to 7.25c. |
| Open-hearth spring steel | 4.00c. to 6.00c. |
| Shafting and Screw Stock: | |
| Rounds | 3.35c. |
| Squares, flats and hex | 3.85c. |
| Standard cast steel, base price | 12.00c. |
| Extra cast steel | 17.00c. |
| Special cast steel | 22.00c. |

### Tank Plates—Steel

| | |
|---|---|
| ¼ in. and heavier | 2.83c. |

### Sheets

*Blue Annealed*

| | Per Lb. |
|---|---|
| No. 10 | 3.78c. |
| No. 12 | 3.83c. |
| No. 14 | 3.88c. |
| No. 16 | 3.98c. |

*Box Annealed—Black*

| | Soft Steel C. R., One Pass, Per Lb. | Blued Stove Pipe Sheet, Per Lb. |
|---|---|---|
| Nos. 18 to 20 | 4.00c. to 4.30c. | ..... |
| Nos. 22 and 24 | 4.05c. to 4.35c. | 4.60c. |
| No. 26 | 4.10c. to 4.40c. | 4.65c. |
| No. 28 | 4.20c. to 4.50c. | 4.75c. |
| No. 30 | 4.45c. to 4.75c. | ..... |

No. 28 and lighter, 36 in. wide, 10c. higher

*Galvanized*

| | Per Lb. |
|---|---|
| No. 14 | 4.30c. to 4.60c. |
| No. 16 | 4.45c. to 4.75c. |
| Nos. 18 and 20 | 4.60c. to 4.90c. |
| Nos. 22 and 24 | 4.75c. to 5.05c. |
| No. 26 | 4.90c. to 5.20c. |
| No. 27 | 5.05c. to 5.35c. |
| No. 28 | 5.20c. to 5.50c. |
| No. 30 | 5.70c. to 6.00c. |

No. 28 and lighter, 36 in. wide, 20c. higher.

*Welded Pipe*

| *Standard Steel* | Black | Galv. |
|---|---|---|
| ½ in. Butt.. | —56 | —40 |
| ¾ in. Butt.. | —61 | —47 |
| 1-3 in. Butt.. | —63 | —49 |
| 3½-6 in. Lap. | —60 | —46 |
| 7-8 in. Lap.. | —56 | —34 |
| 9-12 in. Lap. | —55 | —33 |

| *Wrought Iron* | Black | Galv. |
|---|---|---|
| ¾ in. Butt.. | —30 | —13 |
| 1½ in. Butt.. | —32 | —15 |
| 2 in. Lap.... | —27 | —10 |
| 2½-6 in. Lap. | —30 | —15 |
| 7-12 in. Lap. | —23 | — 7 |

### Steel Wire

| Base Price* on No. 9 Gage and Coarser | Per Lb. |
|---|---|
| Bright basic | 3.50c. to 3.75c. |
| Annealed soft | 3.50c. to 3.75c. |
| Galvanized annealed | 4.25c. to 4.50c. |
| Coppered basic | 4.00c. to 4.25c. |
| Tinned soft Bessemer | 5.50c. to 5.75c. |

*Regular extras for lighter gage.

### Brass Sheet, Rod, Tube and Wire

BASE PRICE

| | |
|---|---|
| High brass sheet | 17¾c. to 18¼c. |
| High brass wire | 18¼c. to 18½c. |
| Brass rod | 16¼c. to 17¼c. |
| Brass tube, brazed | 24⅝c. to 25½c. |
| Brass tube, seamless | 21½c. to 22 c. |
| Copper tube, seamless | 23 c. to 24 c. |

### Copper Sheets

Sheet copper, hot rolled, 24 oz., 21¾c. to 22¾c. per lb. base.

Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

### Tin Plates

| Bright Tin: Grade "AAA" Charcoal 14x20 | Grade "A" Charcoal 14x20 |
|---|---|
| IC.. | $10.00 | $8.50 |
| IX.. | 11.50 | 10.00 |
| IXX.. | 13.00 | 11.25 |
| IXXX.. | 14.25 | 12.50 |
| IXXXX.. | 16.00 | 14.00 |

| Coke—14-20: | Primes | Wasters |
|---|---|---|
| 80 lb.. | $6.05 | $5.80 |
| 90 lb.. | 6.15 | 5.90 |
| 100 lb.. | 6.25 | 6.00 |
| IC.. | 6.40 | 6.15 |
| IX.. | 7.40 | 7.15 |
| IXX.. | 8.40 | 8.15 |
| IXXX.. | 9.40 | 9.15 |
| IXXXX.. | 10.40 | 10.15 |

### Terne Plates

8-lb. coating, 14 x 20

| | |
|---|---|
| 100 lb. | $7.00 |
| IC | 7.25 |
| IX | 7.50 |
| Fire door stock | 9.00 |

### Tin

| | |
|---|---|
| Straits, pig | 35c. |
| Bar | 42c. to 46c. |

### Copper

| | |
|---|---|
| Lake ingot | 15¼c. |
| Electrolytic | 15 c. |
| Casting | 14⅜c. |

### Spelter and Sheet Zinc

| | |
|---|---|
| Western spelter | 8 c. to 8½c. |
| Sheet zinc, No. 9 base, casks | 8¾c. open 9¼c. |

### Lead and Solder*

| | |
|---|---|
| American pig lead | 6¾c. to 7c. |
| Bar lead | 8c. to 8½c. |
| Solder, ½ and ½ guaranteed | 25c. |
| No. 1 solder | 23½c. |
| Refined solder | 20¼c. |

*Prices of solder indicated by private brand vary according to composition.

### Babbitt Metal

| | |
|---|---|
| Best grade, per lb. | 75c. |
| Commercial grade, per lb. | 35c. |
| Grade D, per lb. | 25c. |

### Antimony

| | |
|---|---|
| Asiatic | 6½c. to 7c. |

### Aluminum

| | |
|---|---|
| No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. | 25c. to 27c. |

### Old Metals

The market is stronger and business more active. Dealers' buying prices are as follows:

| | Cents Per Lb. |
|---|---|
| Copper, heavy crucible | 11.7 |
| Copper, heavy wire | 11.2 |
| Copper, light and bottoms | 9.6 |
| Brass, heavy | 6.2 |
| Brass, light | 5.2 |
| Heavy machine composition | 8.2 |
| No. 1 yellow brass turnings | 6.2 |
| No. 1 red brass or composition turnings | 7.2 |
| Lead, heavy | 4.2 |
| Lead, tea | 3.2 |
| Zinc | 3.2 |